UNDERSTANDING PHARMACY CAREERS: FROM UNDERGRADUATE EDUCATION TO FUTURE CAREER PLANS

A thesis submitted to The University of Manchester for the
degree of Doctor of Philosophy (PhD)
in the Faculty of Human and Medical Sciences

2010

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SCHOOL OF PHARMACY AND PHARMACEUTICAL SCIENCES

Contents

Abstract

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The University of Manchester

PhD by published work

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Candidate Name: Sarah Caroline Willis

Faculty: Human and Medical Sciences

Thesis Title: Understanding pharmacy careers: from undergraduate education to future career plans

2010

Informed by a sociological approach, this thesis provides an account of the theoretical and empirical context of pharmacy students' undergraduate careers, beginning with the decision to enter higher education and ending with the final undergraduate year of a pharmacy student's education. The main aim of the published work and of the academic field that it contributes to is to advance understanding of why young people choose to study pharmacy (and thus choose pharmacy as a career), and career aspirations and influences over the course of their pharmacy school career. By establishing what influences and shapes pharmacy students' choices this thesis also provides an account of the degree to which career preferences are limited initially by awareness of opportunities, by socialisation and habitus, and how these are related to undergraduate career success.

The thesis reports findings from studies using a range of methods including focus groups, surveys, and secondary analysis of pharmacy student data from a number of sources. Subjects investigated by the work are British undergraduate MPharm students and graduates. Numbers applying to study pharmacy, numbers accepted, and numbers entering the MPharm are compared and the relative risk of attrition from the MPharm, are also examined. Findings reported here are relevant to undergraduate pharmacy education policy-makers, heads of pharmacy schools, pharmacist employers, the General Pharmaceutical Council (GPhC) and to those responsible for pharmacy workforce planning.

While the primary aim of the thesis is to improve understanding of (undergraduate) pharmacy careers through the application of a number of sociological theories and perspectives, the thesis also considers the ways that findings can usefully inform pharmacy education and policy agendas.

Declaration

The University of Manchester

PhD by published work Candidate Declaration

Candidate Name: Sarah Caroline Willis

Faculty: Human and Medical Sciences

Thesis Title: Understanding pharmacy careers: from undergraduate education to future career plans

Declaration:

The nature and extent of the candidate's contribution to the submitted publications are as stated below:

Paper 1[1]: Willis SC, Shann P, Hassell K. *Pharmacy career-deciding: making choice a 'good fit'.* Journal of Health Organization and Management 2009;23(1):85-102

The paper was written by all three authors, with the first draft completed by the candidate, who also decided upon the theoretical framework applied in the data analysis. While Karen Hassell initiated, supervised and guided the study, the candidate and Philip Shann collected and analysed the data for the paper.

Paper 2[2]: Hassell K, Seston EM, Eden M, Willis SC. *The UK pharmacy degree: attrition rates and demographics of non-completers.* Pharmacy Education 2007;7(3):249-256

This paper was jointly authored. The interpretation of the role played by institutional habitus in explaining attrition was made by the candidate who also, together with Karen Hassell, supervised the project that analysis in the paper is based on.

Paper 3[3]: Willis SC, Hassell K, Noyce PR. *Career intentions of pharmacy students*. Journal of Health Services Research & Policy 2008;13:45-51

Based on data collected as part of a larger programme of longitudinal work, this paper was written by the candidate with input from her co-authors. Data collection and analysis were also both the primary responsibility of the candidate.

Paper 4[4]: Willis SC, Hassell K, Seston EM, Hann M. Using learning outcomes for undergraduate pharmacy education to assess final year students' perceptions of their preparedness for pharmacy practice. International Journal of Pharmacy Practice 2009;17(6):351-358

For this paper the candidate took the lead in analysing and interpreting data collected (once again) as part of a larger programme of longitudinal work, as well as taking the lead in writing the paper. Additional analysis and statistical assistance were provided by Elizabeth Seston and Mark Hann.

All the work presented in this thesis has been completed whilst the candidate has been a member of staff at this university.

None of the work presented has been submitted in support of a successful or pending application for any degree or qualification of this or any other University or of any professional or learned body

I confirm that this is a true statement and that, subject to any comments above, the submission is my own original work.

Signed:…………………………………….**Date:** ……..……..………………

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Dedication

To my boys, Hal and Leo. This thesis is for you.

Acknowledgements

With thanks especially to Karen Hassell for her support and encouragement. And to my colleagues in the Centre for Pharmacy Workforce Studies who have helped me to get this far, thank you.

To my co-authors, thank you for sharing your knowledge and expertise.

I am also grateful to all those who have taken part in research reported here.

Finally, a special mention to Simon and Julia. I couldn't have done this without you both.

Statement

i. eligibility of the candidate under the University's regulations;

Qualifications

September 1993-October 1994: MA (Econ) Applied Social Research, The University of Manchester

September 1986-June 1989: BA (Hons) Combined Studies (I), The University of Manchester

September 1983-June 1985: A-levels in Dress & Fabric (A), Economics (B), English (A), The College of Richard Collyer

Research experience

2004-2010: Research Fellow, Centre for Pharmacy Workforce Studies @ The Workforce Academy, The University of Manchester. Project managing 'A Longitudinal Cohort Study About Pharmacy Careers'. Primarily a quantitative study tracking the early career choices and expectations of a cohort of British pharmacy graduates.

1998-2004: Research Associate in Medical Education, Medical Education Unit, The University of Manchester. Projects undertaken included: a longitudinal study of the development of professionalism within junior doctors; a study of PBL (problem-based learning) in the clinical environment; assessment and PBL group work.

ii. publications submitted:

1. Willis SC, Shann P, Hassell K. Pharmacy career-deciding: making choice a 'good fit'. Journal of Health Organization and Management 2009;23(1):85-102

2. Hassell K, Seston EM, Eden M, Willis SC. The UK pharmacy degree: attrition rates and demographics of non-completers. Pharmacy Education 2007;7(3):249-256

3. Willis SC, Hassell K, Noyce PR. Career intentions of pharmacy students. Journal of Health Services Research & Policy 2008;13:45-51

4. Willis SC, Hassell K, Seston EM, Hann M. Using learning outcomes for undergraduate pharmacy education to assess final year students' perceptions of their preparedness for pharmacy practice. International Journal of Pharmacy Practice 2009;17(6):351-358

iii. The overall aims and achievement of the published work are described in this thesis with reference to the current state of knowledge and research in the field. How this work has contributed to the field is also discussed here.

Glossary of key concepts and abbreviations

In this thesis the concepts and abbreviations listed below are used. Although in other contexts they may have other meanings, here they are used according to the following definitions:

Attrition: Attrition describes when students fail to complete a course of study or fail to graduate and refers to the reduction in the number of students resulting from students' failure to progress.

Capital (cultural and social capital): Used in this thesis to refer to assets that can be deployed to promote social mobility and/or advantage, cultural capital includes knowledge, skills and education and may be transmitted by parents to their children. Social capital refers to resources that are dispersed and distributed amongst networks of relationships; like cultural capital, social capital can be deployed in order to gain power and status.

Career: Referring in this thesis to more than a sequence of related jobs, but to a set of larger social processes and practices, careers in this thesis are viewed in relation to the logic of undergraduate education – the career of an MPharm student – as well as in relation to the pharmacy labour market in which pharmacy careers are experienced in practice.

Career/occupational awareness: Consisting of knowledge, values, preferences, etc and influenced by a range of contextual factors (including cultural and social capital and experiential learning opportunities) career awareness in this thesis is an important construct for understanding how career decisions are made.

Cohort study: A longitudinal research study that follows a group of people – a cohort – for a period of time to establish links between (career) outcomes and earlier events, likely variables of interest etc.

Field: After Bourdieu, 'field' is used here to describe the structured social spaces in which subjects compete and deploy relevant capitals to gain advantage.

Flexibilisation: Conceptualised as a product of restructured labour markets, flexibilisation refers to new 'flexible' types of employment, such as non-standard, temporary and contingent working

Habitus: Within Bourdieu's theory of the reproduction of social inequalities, habitus refers to internalised social structures of dispositions, acquired in particular cultural contexts such as the family, that reflect socioeconomic class, gender, ethnicity. Habitus enables social subjects to adopt the particular and established practices of the social groups to which they belong and provides them with the necessary abilities, knowledge etc., to know the rules of the game and hence to compete in the field.

MPharm: The MPharm is a Master of Pharmacy, an undergraduate degree awarded following four years of academic study in pharmacy. The degree is accredited by the regulatory body for pharmacy.

Non-standard work patterns: Where standard work patterns refers to full-time, continuous employment by a single employer, non-standard refers to flexible work such as part-time or temporary work that may be for more than one employer.

Occupational segregation: Describing the over-representation of some groups on the basis of gender, ethnicity etc., in specific occupations. Occupations may be segregated vertically (an outcome of labour market processes whereby some subgroups experience more career progression than others) or horizontally (where different groups are employed to do different jobs within an occupation).

Preregistration training: In addition to completing the MPharm, pharmacy graduates are required to complete 52 weeks of training in employment (referred to as preregistration training) in a pharmacy practice environment and pass a registration exam before they are eligible to register for practice.

Register: All pharmacists who wish to practise in Great Britain must be registered with the pharmacy regulator, the General Pharmaceutical Council (GPhC). Only those professionals on the register are able to use the title 'pharmacist'.

RPSGB: The Royal Pharmaceutical Society of Great Britain is the statutory regulatory and professional body for pharmacists in Great Britain. At the time of submission of this thesis, all pharmacists must be registered with the Society in order to practice, although the RPSGB is set to be replaced by a separate regulator (the GPhC – General Pharmaceutical Council) and a new professional leadership body.

Socialisation: Socialisation is a sociological concept used frequently in this thesis to refer to the processes and practices by which social subjects learn how to behave and act in particular roles, contexts etc.

Symbolic interactionism: A sociological approach that emphasises the importance of micro-level social interactions in meaning construction; socialisation is a key construct within this approach.

Preface

A study of careers – of the moving perspective in which persons orient themselves with reference to the social order, and of the typical sequences and concatenations of office – may be expected to reveal the nature and "working constitution" of a society.[5]

Careers link individual actors, organisations and society as actors move through structures over time.[6] A study of careers, then, brings together micro, individual sequences of role transitions and macro processes of social reproduction within its frames of reference.[7] This means that studying careers provides a lens through which to view the dialectic between the unique on the one hand and the regular and the repeated on the other, and provides insight into the central sociological question of how agency and structure are related.[8]

Any number of different theoretical perspectives may be adopted to explore this dialectical relationship between agency and structure; in this thesis, structure is conceptualised as both enabling and restricting action, and action as both following and reproducing structure. But because studying careers cuts across multiple levels of analysis it also follows that analysis will require contributions from many frames of reference or disciplinary perspectives. My intention is to bring together a range of approaches and perspectives in order to research aspects of – and hence to understand – changes in the forms, actors and contexts of (undergraduate) pharmacy careers.

While explicitly exploring careers this thesis also reflects my own personal development – or career – as a researcher who has been fortunate in being able to work primarily on one study. During the course of this study the pharmacy profession has undergone significant change, with the introduction of a new regulatory framework and the establishment of new roles for pharmacists. I hope that the research presented here can contribute to and inform future developments in the profession.

Chapter One

1.1 Background

This chapter summarises the publications submitted for a PhD by published work and provides an outline of the thesis. There are four publications submitted here; they are listed in section 1.2 below, with further details about the individual publications presented in section 1.3. The publications submitted are similar thematically in that they all report findings of relevance to debates in the pharmacy workforce literature, and all contextualise findings in relation to pharmacy careers. Each paper focuses on one aspect or debate, with a range including an exploration of factors influencing career deciding of pharmacy students and graduates[1] to an analysis of the extent to which pharmacy students feel equipped with the competencies necessary for pharmacy practice.[4] The publications submitted share a broadly sociological approach to conceptualising pharmacy careers as being subject to social change – that is, they conceptualise pharmacy careers as being subject to widespread change over time in terms of behaviors (such as the rising proportion of pharmacists working part-time in Great Britain (GB)[9]) and in terms of attitudes (influenced by shifting cultural values and norms associated with the increasingly diverse demographic and cultural characteristics of recently qualified pharmacists[9-11]).

The publications submitted all reference current debates within the pharmacy workforce literature such as workforce shortages in the profession, and contribute to a programme of work designed to improve the profession's understanding of its workforce, their attitudes and behaviours. Where the publications submitted differ is in the methods used to examine pharmacy careers; in an effort to understand the nature of pharmacy careers, as well as the types of careers pharmacy students expect and how they might change, pharmacy careers are investigated using focus groups[1], surveys[3;4] and secondary analysis of data from a number of other sources.[2]

Key themes and notable findings of the publications submitted are described further in this chapter in section 1.3 below, with the description drawing on both a number of common concepts and topics underpinning the work, as well as those that are unique to each particular publication. The methods used by each of the publications are also described here; they vary according to the research question and the aim of each paper but share a focus on explaining the context in which pharmacy career choices and decisions are made and the resources – including the processes and experiences – involved in these choices and decisions. The description of the four papers submitted in this thesis also covers the study population investigated in each paper, and indicates the value of findings presented.

While the published work is not restricted to research on a single group or subject, two[3;4] of the four publications submitted present findings from the same study, a longitudinal cohort study about pharmacy careers. Those papers not concerned with this cohort study[1;2] introduce themes important in pharmacy workforce research of particular relevance to, or inform the methodology of, the cohort study. For example, one paper submitted as part of this thesis[2] considers the numbers of students entering and exiting pharmacy school, with a view to measuring the extent of non-completion of, or attrition from, pharmacy degrees. As this paper concludes that data collected longitudinally would make it easier to both understand attrition and to make accurate forecasts of the number of new pharmacists likely to join the profession upon satisfactory completion of the mandatory period of education and training, it sets the scene, methodologically, for the research reported by the cohort study publications submitted here.

1.2 Introduction to the published work

The publications submitted, collectively referred to in this thesis as 'the published work', are listed next. The list is not chronological by date of publication but reflects the processes and practices involved in entering and developing a pharmacy career during a very early career stage – that of undergraduate pharmacy education – and provide insight into a career

trajectory that begins with motivations for entering undergraduate education and continues until students are about to graduate. The list also reflects the division between the papers presenting findings that provide context to the cohort study (papers 1 and 2 in the list below) and those papers that report findings from the cohort study itself (papers 3 and 4).

Paper 1: Willis SC, Shann P, Hassell K. Pharmacy career-deciding: making choice a 'good fit'. Journal of Health Organization and Management 2009;23(1):85-102

Paper 2: Hassell K, Seston EM, Eden M, Willis SC. The UK pharmacy degree: attrition rates and demographics of non-completers. Pharmacy Education 2007;7(3):249-256

Paper 3: Willis SC, Hassell K, Noyce PR. Career intentions of pharmacy students. Journal of Health Services Research & Policy 2008;13:45-51

Paper 4: Willis SC, Hassell K, Seston EM, Hann M. Using learning outcomes for undergraduate pharmacy education to assess final year students' perceptions of their preparedness for pharmacy practice. International Journal of Pharmacy Practice 2009;17(6):351-358

While discussed further in section 1.3 of this thesis, in summary the published work consider the following: factors influencing career choices amongst UK pharmacy students and graduates (paper 1); student attrition from the MPharm programme in the United Kingdom (UK) (paper 2); paper three presents findings related to influences on career choice and intended career path and examines the extent to which career intentions change as MPharm students progress through their undergraduate programme; finally, paper four evaluates MPharm students' perceptions of the degree to which the learning outcomes of curricula had been met and hence explores the extent to which students felt prepared for pharmacy practice.

1.3 Overview of the published work

In this section the published work listed and summarised in 1.2 above is described further, with the paper ordering reflecting both the sequence in

which early pharmacy career choices and decisions are made as well as to demonstrate the ways that the work methodologically has evolved and developed over time. In addition, the ordering reflects the relationship of the first two papers to the much larger programme of work undertaken by the longitudinal cohort study; signposting to relevant cohort study findings are therefore included in the text to demonstrate this relationship, where relevant.

1.3.1 Pharmacy career-deciding: making choice a 'good fit'.

As there is little recent UK research reporting reasons for choosing pharmacy as a career (see these papers[12-15] for examples in the literature) the purpose of this paper was to investigate motivations for choosing to study pharmacy and a career in pharmacy. Published in Journal of Health Organization and Management, a multidisciplinary journal that supports both theoretical and applied research, this paper presents a model of pharmacy career choice grounded in the concept of a 'good fit' between a student's values, their personal characteristics, their social location and their personal experiences. The 'good fit' – a metaphor for the process of matching an individual's preferences, experiences, etc – encapsulates the ways that participants in the research made sense of their career choices by bringing together past events, experiences, family influences and constructed narratives of choice in which their decision to choose a pharmacy career appeared inevitable.[16]

Using a combination of small group interviews and focus groups, the purpose of the paper was, therefore, to examine pharmacy career-deciding as a complex, socially-located process with both pharmacy students and graduates. We purposively sampled different populations (that is, both undergraduates from different years of the MPharm and graduates) in order to obtain a range of possible perspectives on pharmacy career-deciding. A further objective of the study was to develop a questionnaire for the cohort study about pharmacy career-deciding.

Data analysis used in this paper consisted of taking an interpretivist[17] approach to the transcripts produced from audio recordings of the small group interviews and focus groups. This approach focuses on the ways that meaning is constructed and sense made of situations by participants as they tell stories about themselves and their career-deciding, with narratives of career-deciding constructed by research subjects deconstructed in our analysis to uncover the ways that stories bring together elements of family habitus[18] – or assumptions about 'what is 'reasonable' to expect'[18] for 'people like us'[19] – dispositions, events etc., and in so doing define 'horizons of action'[20] in career decision-making.

Results of the study presented in this paper also suggest that choosing a career is a dynamic process that involves more than the act of applying to study at a higher education institute; in this way, the process of choosing has a kind of career logic in itself, in that it unfolds over time and is constructed through interactions with others in the same way that a work career might unfold over time and becomes meaningful through social interaction. This concept of career choice as a career narrative is derived, in theoretical terms, from a view that career choice is constructed and made meaningful through the interpretation of social interaction, and thus career-deciding is conceptualised as not simply a planned activity but as incorporating unpredictable or chance events[21] that, through interpretation, become important parts of a career-deciding narrative told in representations of the self. Findings also recognise the importance of socialisation – a concept that informs all the papers submitted in this thesis. In the context of this particular paper, two sources of occupational awareness or 'anticipatory' socialisation[22] that add to some students' cultural capital[23;24] and that may act as resources in making the decision to become a pharmacist – either having pharmacy work experience while at school or having knowledge of pharmacy work gained through family members' involvement with the profession are identified as important.

Implications of the paper for those involved in giving careers advice to young people before they apply to study at an HEI are that it is as important to consider providing opportunities for young people to gain meaningful exposure to occupations as it is to take into account personal preferences, family background, personal characteristics and work values. Moreover, careers advisors should be mindful of the finding that sources of career awareness are multiple[25;26] and relate to cultural differences in values – in particular to differences in the values of family and family networks between ethnic groups. From a policy and regulatory perspective, this paper suggests that many students choose a career in pharmacy without having any knowledge of what pharmacists do in their jobs and this may give rise to a mismatch between expectations of pharmacy work and experience of practice. Perhaps those responsible for recruiting pharmacy students and pharmacists should pay attention to managing students' and pharmacists' expectations of work, given evidence that when an employee's expectations about employment are not met by their experiences of that employment their commitment to work is undermined[27] – which sometimes results in a decision to leave pharmacy practice altogether relatively soon after registration.[28]

1.3.2 The UK pharmacy degree: attrition rates and demographics of non-completers.

This paper was published in Pharmacy Education, an international journal concerned with pharmacy education and training approved and recommended by the International Pharmaceutical Federation (FIP), the World Health Organisation (WHO), and the European Association of Faculties of Pharmacy (EAFP). The paper provides a discussion of the problems associated with the lack of information about completion rates for pharmacy students in the UK, such as the difficulty in making accurate workforce projections about the future supply of pharmacists based on the numbers of undergraduate students.

Several different populations are investigated in addressing the research questions related to (factors associated with) attrition from the MPharm, including those applying to study pharmacy, those accepted to study pharmacy, those actually registered as having entered the MPharm, and the number of exits from the four year period of undergraduate education plus one year of preregistration training that must be successfully completed before students can enter onto the register of pharmacists in Great Britain (GB). As well as a time series analysis of change in the number of students accepted onto the MPharm course, change in the number of entrants to the MPharm and change in the number of new entrants to the register of pharmacists, analysis in the paper identifies the extent to which attrition varies by school of pharmacy attended. Differences between home and overseas students, and between male and female students, are also investigated in the paper to determine the relative risk of attrition.

Results indicate that there is no clear trend in attrition from the MPharm, but that there are large differences in rates of attrition when data are analysed by institution (pharmacy school attended), by student type (overseas students are at a significantly higher risk of drop out than their home peers) and by gender (male students are at a significantly higher risk of drop out, irrespective of whether they are a home or overseas student). Comparing between the number of entrants to the MPharm and the number of students passing the registration exam five years later suggests that on average attrition from the MPharm is equivalent to 9.5% per cohort.

Why some subgroups of students should be more at risk of not completing their undergraduate degrees than others is discussed in the paper in terms of social and academic integration, with the concept of 'institutional habitus'[18;29] useful in understanding attrition. Institutional habitus refers to the cultural norms and practices of a higher education institute (HEI). Because the institutional habitus can either help or undermine the extent to which students feel they fit in it is likely to be relevant to explanations of who completes the MPharm. For example, if an HEI privileges the experiences

and learning styles of some groups of students – such as home students over those of students from overseas – then the institutional habitus may be viewed by overseas students as unsupportive or as presenting barriers to their social integration, and may thus be a factor in their withdrawal from their undergraduate programme. Implicit in this theory of the relationship between attrition and institutional habitus is another concept – that of socialisation – which informs all the submitted published work. In relation to attrition and habitus, socialisation refers to the way MPharm students gain a sense of where they fit in – or don't fit in – that helps to explain why some students adjust to the HEI better than others and hence why some may be more at risk of not completing their course than others.

There are a number of important policy implications arising from the findings presented in this paper. First of all, having a reliable measure of attrition means that it is possible to make more accurate estimations of the numbers of new pharmacists – and the characteristics of those new pharmacists – that can be expected to join the register each year. This measure can be used to inform workforce supply models. As strategic workforce planning is central to NHS health reforms this information is vital for producing robust estimations of future pharmacist populations and their likely characteristics[30;31] – such as their gender – because we know that, for example, female pharmacists are more likely to work part-time than their male colleagues,[9] and that part-time working begins relatively soon after registration,[32] a trend in workforce participation that effectively reduces workforce supply. Second, from a teaching and learning perspective, by identifying which students are likely to drop out of the MPharm programme, and linking this to the demography of the undergraduate population, means that strategies can be devised to support subgroups of students identified as being at risk of dropping out, such as social activities aimed at better integrating students from non-traditional backgrounds. In parallel to these strategies it may also be possible to create an institutional habitus that recognises and values the experiences and learning styles of at risk student groups.

However, in order to make more accurate projections of supply or to understand factors related to attrition more fully further data, collected longitudinally, is recommended by the paper. Such data would enable research to identify how drop out behaviours vary over time and would provide a fuller understanding of attrition. Although outside the scope of the published work submitted in this thesis, a recent report and conference paper based on analysis of cohort study data have begun to address this gap in the literature in an examination of relationships between motivations for studying pharmacy, entry pathways to the MPharm degree programme and registration for practise with the Royal Pharmaceutical Society of Great Britain (the RPSGB).[33;34] These analyses have found further evidence that background factors (being female, not being from a minority ethnic group) are significantly associated with registration with RPSGB; moreover, this work has established that undergraduate academic performance is important when modelling attrition, since failing undergraduate exams significantly predicted those who failed to register for practise.

1.3.3 *Career intentions of pharmacy students*

Building on the sociological approach of the career-deciding paper described in section 1.3.1, this paper reports analysis of cohort study data that considers the influence of a range of occupational awareness variables associated with anticipatory socialisation to the profession on the career intentions of pharmacy students. Appearing in the Journal of Health Services Research and Policy, an international journal with a remit to provide a platform for exploring issues in healthcare policy and research, this paper is also concerned with the extent to which career preferences change over the course of the MPharm; its relevance to debates in the pharmacy workforce literature lies in its investigation of possible reductions in future pharmacist supply should predictions of career intentions to not enter pharmacy practise in GB or to practise abroad be translated into workforce behaviours.

The population analysed in this paper is the cohort of British pharmacy students graduating from the MPharm in 2006; data from the cohort were collected at two time points – as third and fourth (final) year students. The first stage in analysing these two data sets involved cross-sectional investigation of each data set. Following this, a between survey comparison was made, with a unique identifier used to link students' responses between the two data collection points. The between data sets methodology was based on that devised by a longitudinal study of the dynamic nature of nurses' career development,[35;36] and is important to the cohort study's explicit focus on measuring and explaining pharmacist workforce behaviours and how these behaviours may be predicted; longitudinal research such as the cohort study thus provides information about the temporal evolution of behaviour and investigates how career outcomes such as patterns in workforce participation are related to earlier events, choices etc.[37;38]

Questions examined in the paper include the source, amount, type and nature of occupational information, and when and from whom it is obtained, as well as how this has a bearing on pharmacy students' career expectations and intentions. By establishing students' prior knowledge of pharmacy, and by establishing from whom and where students receive occupational knowledge, the paper sets out to model how varying levels of occupational awareness influence students' career intentions and situates findings in terms of students' gender and ethnicity; points at which these characteristics have an effect on career intentions are also identified in the paper.

In theoretical and conceptual terms, this paper contextualises intended workforce behaviours in relation to questions about occupational segregation and perceived opportunity structures in the profession. And in light of evidence that structural constraints contribute to labour market inequalities,[39] resulting in occupational segregation in terms of the types of jobs done in pharmacy,[25;26] the paper also questions the extent to which

structural differences in pharmacy careers may undermine the psychological contract[40;41]between pharmacy graduates and their chosen careers, and result in intentions not being good predictors of workforce behaviours.

What emerges from results presented in this paper is that career awareness varies largely according to students' personal characteristics; that having exposure to pharmacy work prior to entering pharmacy school is associated with having clearer future pharmacy practice career plans, perhaps as a result of the accrued cultural capital amassed through anticipatory socialisation; that career preferences reflect existing occupational segregation in relation to students' gender and ethnicity; and that career intentions remain relatively stable across the final two years of the MPharm.

In terms of relevance to pharmacy workforce policy and for practitioners, this paper makes several key contributions. First of all, that career intentions are informed and shaped for some students via socially located resources such as work experience or having a pharmacist in the family is an important finding, since it suggests that occupational awareness is relevant for understanding career expectations, and may have a bearing on the degree to which students become established in and committed to their subsequent pharmacy careers. Those with an interest in recruiting future cohorts of pharmacists may, as a result of this, want to consider the relative merits of employing graduates whose occupational awareness can be traced to pre-entry to pharmacy school. Secondly, in the light of findings that students' career preferences reflect existing occupational segregation, the effects on graduate career development of working in a particular niche of the pharmacy labour market may be relevant for future career commitment if previously noted constraints on pharmacy careers for some subgroups of pharmacists working in some sectors or roles continue to occur. Finally, and more generally, results presented in this paper suggest that career intentions and occupational awareness may be important variables for predicting and understanding subsequent workforce

commitment and participation. Certainly, further analysis of these data suggests that they are, but is beyond the scope of the published work included in this thesis.[33]

1.3.4 Using learning outcomes for undergraduate pharmacy education to assess final year students' perceptions of their preparedness for pharmacy practice

The fourth paper submitted for this thesis was published in the health services research journal International Journal of Pharmacy Practice. It provides insight into the final stage in the early (education-focused) careers of the cohort before they enter pharmacy practice. Using learning outcomes for and of undergraduate pharmacy education defined by the (outgoing) regulatory body for the profession, the RPSGB, and grounded in a model of the ways that learning outcomes are related to one another in clinical practice,[42] in this piece of work final year cohort study participants were asked to evaluate their preparedness for two aspects of practice: preparedness for competence in the performance of pharmacist-role tasks; and preparedness for competence for a professional approach to those tasks. While learning outcomes are the intended products of the learning process and may be directly related to assessment they have not been widely used in pharmacy education or in pharmacy education research; moreover, because they rely on prescriptive statements for and of learning they may not assess, for example, how clinical knowledge is applied in practice.[43] Despite these methodological shortcomings, given that the regulatory body defines learning outcomes for undergraduate pharmacy education it is important to investigate the extent to which students perceive they have been met during the MPharm.

After computing some descriptive statistics for variables, both initial univariate and subsequent multivariate techniques were used to analyse the data. Results of the preliminary analysis suggest that while students are most likely to feel prepared for general competencies necessary for the performance of tasks such as having a good clinical knowledge or effective

communication skills they are considerably less likely to feel prepared for specific competencies such as knowledge of over the counter (OTC) medicines. Several significant differences based on demographic variables – gender and ethnicity – were found, but most importantly, pharmacy school attended was found to have a significant effect on students' perceptions of ten of the fifteen learning outcomes evaluated.

Following this initial univariate investigation of the data, fixed-effects logistic regression was used to determine if pharmacy school attended independently predicted variation in perceptions of preparedness for the learning outcomes when differences in student characteristics between pharmacy schools were controlled for. Here, pharmacy school attended predicted variation in eleven learning outcomes, a finding raising the question of whether some pharmacy schools better prepare and socialise their students for practice – or whether it's students' perceptions of preparedness rather than their actual preparedness that varies between pharmacy schools. Given the role of institutional habitus in explaining why some students fail to complete their MPharm reported before[2;29] it is possible that here, once more, differences in student experiences may be linked to the different cultural norms and practices that students encounter in the various schools of pharmacy.

Other questions raised by the findings presented in this paper – and relevant to workforce planners, policy-makers and to academic pharmacists – relate to low levels of perceived preparedness for OTC medicines. With pharmacists being encouraged to take on patient counselling roles in community pharmacy[44] this lack of preparation for one aspect of pharmaceutical care is of concern; moreover, since lack of perceived preparedness for OTC medicines was also found to be associated with not feeling prepared for other pharmacist tasks means that it is possible that some students are not being prepared for multiple competencies. To address these problems, curriculum designers might want to incorporate more formal clinical skills teaching and assessment; such an incorporation

would allow both students and academic staff to (better) determine the extent to which their curriculum is achieving prescribed learning outcomes for undergraduate pharmacy education.

1.4   Outline of the thesis

Having described above the published work submitted in this thesis, what follows in the next chapter (Chapter Two) is a discussion of career theories and key concepts including socialisation, flexibilisation and restructuring employment and work arrangements that are relevant to the published work. This sets the scene for Chapter Three, where a number of literatures are reviewed – in particular, research exploring relationships between higher education and career plans and career development are presented. Chapter Four – the final chapter – reflects on the implications of findings from my research, and concludes with suggestions for future work.

Chapter Two

2.1 Overview of the chapter

This chapter provides the theoretical context to the published work, with the main sociological approaches to explaining careers that inform the papers and that make a significant contribution to understanding the broader labour market context to the published work presented. Following this, links between key concepts described in the chapter and the theoretical standpoint adopted by each of the papers are presented.

2.2 Sociological approaches to careers

Three sociological approaches to understanding careers are important to the published work submitted here – those of symbolic interactionism, Bourdieu's critical sociology and occupational sociology. Both symbolic interactionism and Bourdieu's critical sociology draw on the ways that socialisation creates identity through interaction and relationships with significant others,[18;20;45] and thus bridge between agents or individual actors and objective, structural aspects of the social world.[22;46;47] Occupational sociology, on the other hand, views careers from a more macro, structural perspective, with influences of workforce/occupational labour market restructuring on careers the focus.[48] The shift from describing micro processes and practices that influence and shape career experiences (including choice) to a macro focus on career structures that influence and structure career experiences that may also constrain choice, provides a wider perspective to the published work.

2.2.1 Symbolic interactionist approaches to careers

A sociological concept of career emerged from studies describing the details of daily life and behaviours associated with becoming a member of a (deviant) subculture, with 'career' used to describe the interactions, role adoption and situations experienced over a life course made meaningful in relation to the reference group – the subculture – through which identity was

learned and bestowed.[49] In this sense, 'career' refers to the series of roles adopted, interactions and situations encountered and the meanings learned about how to act in those roles, interactions and situations constructed in relation to the social group to which a subject belongs.[49]

Applied subsequently to social groups such as professions and to studying careers as examples of other types of social experiences and behaviours in other contexts (most commonly workplaces and organisations) the concept of career came to be connected, sociologically, with the study of work and the environments in which work takes place that 'formally integrate human effort'.[50] In particular, studies focused on the ways that occupations define workers' 'proper conduct'[50] – that is, what an occupational group is allowed and expected to do – and employ a construct of career to explain the ways that occupational groups socialise members by providing a mode of thinking and set of beliefs about work and members' roles in the structured social relationships created by work.

2.2.1.1 Socialisation

Thus the processes involved in learning the 'proper conduct'[50] of working in a particular institution or occupation are those of learning to become an insider, of taking the role of others.[51] These processes consequently involve learning about the roles that members of an occupational group or workers in an institution are expected to occupy, how to relate to others when occupying that role, and what others expect of the role.[22] Socialisation therefore describes the processes of social learning, or sense-making,[52] occurring through interaction that shapes and refines both subjective, individual identity and a social identity.[53;54] It represents how 'society lives in people',[54] and describes 'the process by which a person enters a social structure',[55] and is thus an important sociological construct for imagining how agency and structure are related.

Because socialisation involves learning about the 'proper conduct' of roles during the transition from outsider to insider of the social group,[50] and the 'proper conduct' of an adopted role is contextually and historically shaped and regulated, the processes of socialisation vary. Contextual factors creating varying career socialisation experiences relevant to this thesis include families, higher education institutions (pharmacy schools), and work experience gained in a pharmacy practice environment. As agents of socialisation, these different social contexts each provide an interpretative frame of reference (or reference group) for making sense of expectations, values, and meaning about work and careers – and provide a context for social learning about work and careers that represents socialisation *for* work[56]

Socialisation *for* work that precedes socialisation *by* work prepares subjects for taking on a future role or position and takes place before a work role is actually learned and experienced and provides 'acculturative experiences'[57] of pharmacy work.[22;54] Described as 'anticipatory socialisation'[58] this process consists of preparing for a new role by learning about the attitudes and values of a social group (such as an occupation) outside the social reference group a subject currently belongs to (such as the family). In learning about the new group and the role that being a member of that group involves, such as the roles performed by pharmacists in practice, subjects begin to construct ideas of what the new, anticipated role entails.

Having prior acculturative experiences of pharmacy and pharmacy careers gained through anticipatory socialisation affords subjects with social training[59] or 'socialized subjectivity'[60] and provides subjects with a preliminary or initial sense of the occupation and how it works. But these early, anticipatory career socialising experiences are interpreted within the frame of reference of prior socialising experiences, within what social theorist Pierre Bourdieu referred to as habitus. Together with capital and field, these three elements (habitus, capital, and field) provide a framework

for further understanding the mechanisms and processes providing socialisation for work; they are described next.

2.2.2   Habitus, capital and field

For Bourdieu, socialisation involves the internalisation and incorporation or embodiment of objective, external social structures, with early socialisation – that taking place within the family – providing a kind of 'social inheritance' that is key to the acquisition of social identity and in constructing a sense of appropriate courses of action 'for people like us'.[24;61;62]   Through socialisation members of a social group acquire a set of dispositions reflecting the structure of the social world in which they are located and a way of acting in, knowing and appreciating the world that also reproduces it.[62;63]   Although Bourdieu prioritises dispositions, or internalised structural positions, in the reproduction of structure through social practices, he sees a reflexive relationship between them that is mediated by *habitus*, the key mechanism in social reproduction that represents both the ways that social patterns are perpetuated within a social context and the ways that individual and subjective beliefs, ideas and preferences may act to influence those social patterns.   Bourdieu describes habitus as, 'the strategy-generating principle enabling agents to cope with unforeseen and everchanging situations…a system of lasting and transposable dispositions which, integrating past experiences, functions at every moment as a matrix of perceptions, appreciations and actions and makes possible the achievement of infinitely diversified tasks'.[60]

Socialisation, from Bourdieu's perspective, takes place within *fields*. Using the metaphor of strategic game-playing, Bourdieu defines fields as structured sets of practices and positions in which subjects try to advance their positions by competing for resources.[24] As the rules of the game – as a set of relationships, roles, expectations, etc. about how to act in a field – are accommodated and internalised over time, they therefore contribute to and construct the habitus.

In order to try to distinguish themselves from others in a field, agents deploy various forms of *capital* (or forms of power) in symbolic competition. The type and form of capital most valuable or powerful in any field is defined by the rules in which it takes place, and is hence reproduced through playing in the field.[64;65] Moreover, because capital is unevenly distributed so that subjects' chances to influence and win in a field are also unevenly or hierarchically distributed, social practices taking place in the field reproduce the hierarchy of relative advantage/disadvantage.

In the context of this thesis, Bourdieu's ideas are useful for thinking about career choices made by young people within the context of possible 'horizons of action'[20] and for explaining why some fit in better with the institutional habitus of pharmacy school[29] and subsequently experience greater career success. From a Bourdieusian perspective it is through the primary socialisation effected by the family that some young people are better disposed to education and inherit capital (and hence advantage) that contributes to the generation, creation and/or acquisition of career capital (beginning with the completion of the MPharm[2]). Habitus, too, has been shown to socialise the children of professionals so that they are better disposed to become professionals themselves through the transmission of social/occupational inheritance of cultural capital that provides advantage in professional career fields.[23;24] It is likely that similar social practices predispose MPharm students with a pharmacist in their family to enter the degree course, and provides them with cultural capital or knowledge of pharmacy as an occupation and set of social practices denied to those lacking it. Moreover, these early socialisation experiences also dispose students to fit into the pharmacy career field because they have already been socialised to its habitus and are thus able to act, perceive and think according to the rules of the career field.[20]

The field or work systems in which pharmacy careers develop are themselves influenced by contextual factors associated with changing employment patterns and changes to job security and employment contracts. A number of these contextual factors are discussed next.

2.2.3 Contextual factors transforming careers

The changing global context of competition and deregulation of labour markets are restructuring work and employment arrangements, with the result that labour is becoming increasingly flexible.[66-69] Accompanying this flexibilisation are diminished job security, reconfigured employment relations such as those experienced by rising numbers of contingent workers, and narrowed or reduced long-term employment opportunities within institutions or organisations.[70] Some of the consequences of this reorganisation of work and employment are considered in the following sections in relation to pharmacy careers.

2.2.3.1 Flexibilisation of labour

Flexibilisation of labour can refer to both functional/internal flexibility (the substitution between workers assigned to one task or function with workers tasked with other functions) as well as to numerical/external flexibility (created using nonstandard employees or through changing the working patterns of the existing workforce)[71] and is associated with nonstandard forms of employment such as part-time, temporary, contract and portfolio working.[72-75] While once primarily associated with retail, leisure and financial services sectors,[68] key changes in the composition of the nonstandard workforce have taken place, with a marked expansion in the numbers of professional and managerial workers entering this type of employment.[76;77]

Where it is assumed that nonstandard working is synonymous with low pay, low quality employment, restructuring of labour markets into core and

peripheral jobs is viewed as problematic.[73;75] Marginalisation with regard to training and development opportunities, and exclusion from decision-making, suggests that, for many professionals, nonstandard employment is also not without its costs.[77] By contrast, benefits of flexible employment have also been reported, with workers who have portable skills (such as pharmacists) found to be most likely to experiences positive outcomes[71] including greater opportunities for balancing life in and outside work, and improved remuneration.[78] Recent work on restructuring within the pharmacy labour market[79;80] also indicates that non-standard working provides both opportunities and constraints – opportunities to avoid aspects of pharmacy work such as long hours and working without a break that are major sources of dissatisfaction but constraints such as lack of guidance and support, suggesting effects on pharmacist employees of nonstandard employment are varied.

Along with changes in employment patterns and labour configurations restructuring and flexibilisation of labour has further implications for the context in which pharmacy careers are experienced and develop. Following Kanter's model of three career forms or logics[81] these implications are considered in relation to bureaucratic, entrepreneurial and professional types of pharmacy career.

2.2.3.2 Pharmacy career logics

Bureaucratic or organisational careers are those that develop within the internal labour markets of large organisations and public sector employers. These large, multi-layered organisations are viewed as providing employment security and a structured, clearly-defined career ladder within the boundaries of a single organisation, where loyalty and strong attachment to an organisation is exchanged in return for job security, and whereby seniority and experience are the basis for career progression.[81;82] With 69.1% of community pharmacists permanently employed by multiple community pharmacies or supermarkets and the vast majority of hospital

pharmacists employed by the NHS working as employees rather than as non-standard locums[83] many pharmacists' careers are likely to involve working within one organisation over the course of their working life, suggesting that these pharmacists may find themselves in a position to develop organisational careers. But as opportunities for this circumscribed and rigid career trajectory are reduced as a result of the large scale shift in the forms of employment taking place within organisations, career trajectories confined to one organisation are likely to decline in future.[84]

Workers whose careers are not tied to internal labour markets can construct entrepreneurial or professional careers. In pursuing an entrepreneurial career, a worker shares in the rewards that accrue through growth in the scope or volume of a business. In the context of the increasing dominance of large organisations in the community pharmacy market place entrepreneurs may find it difficult to establish careers as independent self-contractors. Yet given the key resource of entrepreneurial careers is 'the capacity to create valued outputs'[81] increased flexibility in employment may create new opportunities for pharmacists to grow their roles and take on new responsibilities through other types of self-employment.

Professional careers are also likely to be influenced by labour market restructuring and increasing flexibilisation of labour. These careers are defined by a growth in knowledge, skill, specialisation and reputation over time, with those following this career logic more likely to experience cross-organisational mobility because they have a weak attachment to an employer but a strong attachment to their profession. Professional careers of nonstandard workers, such as pharmacy locums and portfolio workers, can be conceptualised in terms of their characteristic 'boundarylessness'[70] and involve 'sequence[s] of employment-related positions'[85] across organisational boundaries. Although boundaryless careers are not restricted to the professional career form they flourish in occupations where the workforce has the capacity to learn and develop[86] such as pharmacy.

Within a professional career logic, career success is measured in terms of psychological rewards such as experiencing meaningful work rather then through incrementally increased financial rewards associated with hierarchical advancement in the bureaucratic career model.[87] Thus, in stressing the value of internal or intrinsic over external or extrinsic measures of career success, theories of boundaryless careers draw on the role played by life and work experiences in developing a career identity, the 'structure or network of meaning in which the individual consciously links his own motivation, interests and competencies with acceptable work roles'.[66]

Boundaryless careers rely on workers to take responsibility for their career and professional growth, and require workers to mobilise career capitals in a career field. Career capitals consist of three types of knowledge: knowing why, knowing how, and knowing whom.[7;88;89] Where knowing why relates to motivation, and provides the link between identity and identification with work,[89] and knowing how career capital provides workers with the technical expertise that can be transported across organisational boundaries and as such facilitates boundaryless working,[88] knowing whom operates in a similar way to social capital in that it consists of assets or resources that are distributed through a network of social relations that individuals can make claim to through their social connections.[88;90] Given competition in the career field, career success in flexiblised labour markets will depend upon those workers who are able to mobilise the most – and the most highly valued types of – career capital.

Conceptualising careers as enacted beyond the boundaries of employing organisations is part of a wider discourse focused on explaining social changes taking place in work and careers that is outside the scope of this thesis. However, one aspect of these changes that is relevant here is the extent to which work is becoming a less important – or decentred – part of a person's identity.[91;92] The extent of this decentring will, of course, depend

on a worker's attitude or dispositions to work and on the nature of the relationship between them and their employer – dispositions that are informed by both the career and primary socialisation effected in and by the family habitus. These dispositions represent cognitive and non-cognitive habits of mind and body that effectively brings concepts from vocational psychology into sociological discourses about careers, career choice and career expectations.[63]

The switch from sociology to psychology essentially reflects a difference in interpretation of agency[69] – that is, a difference in approach to conceptualising the ways that careers are chosen, experienced and developed. Where sociological approaches are sensitive to the cultural and economic context that may influence or constrain the ways people make decisions and choose their work,[93] and allows research to consider how gender, ethnicity, and employment conditions interact with careers, career choice and aspirations in a number of ways, approaching careers from a vocational psychological perspective allows research to take into account the role of social cognition in career choice.[94] Although obviously important to understanding pharmacy careers, psychological theories are beyond the scope of the published work submitted in this thesis.

2.3 Concluding remarks

The aim of this chapter has been to provide the theoretical context to the published work. Main themes and concepts relevant to the submitted papers have been described. What links the four papers in some way is the concept of socialisation – whether it is to a profession or occupation, to pharmacy school culture, etc. What distinguishes each of the papers from the others, though, is the emphasis placed on the social conditions of careers and careers choice. This is true whether the focus is on micro processes and practices of socialisation to pharmacy via the occupational or social inheritance that provides career capital or whether the focus is on macro-structural aspects of careers such as labour flexibilisation, non-standard working and career models. What follows, in concluding this

chapter, is a summary of the theoretical standpoint adopted by each of the publications submitted and a (very) brief summary of the theoretical context to the published work overall.

Paper 1: Pharmacy career-deciding: making choice a 'good fit'.

In theoretical terms, this paper explores how pharmacy students and graduates interpret and make meaning out of the processes and practices involved in defining the 'horizons of action'[20] of their career decision-making, and hence is grounded in the symbolic interactionist tradition of viewing the adoption of occupational roles as important for constructing a sense of self. Drawing on the role of family habitus in constructing cultural values, as well as on opportunities for deploying the social inheritance of occupations, ethnicity in particular is important in determining what is appropriate 'for people like us',[61] especially amongst Asian participants in the research. Perceived occupational opportunities– or macro aspects of pharmacy careers – are also conceptualised in the paper as influencing career-deciding, and hence are important to the thesis' central focus on why young people choose to study pharmacy and on how career perceptions are constructed.

Paper 2: The UK pharmacy degree: attrition rates and demographics of non-completers.

Approaching attrition from a sociological perspective, this paper suggests that the socialising effects of a pharmacy school's institutional habitus contribute to whether pharmacy students feel that the institutional environment is 'for people like us'.[61] Institutional habitus – and the social inheritance provided by students' family habitus prior to entering pharmacy school – are important theoretical and conceptual tools for understanding why the processes and practices involved in the socialisation that takes place during undergraduate education influence different groups of students differently, especially those from overseas who may be disposed to different learning styles to traditional home students.

Paper 3: Career intentions of pharmacy students

The role played by career capitals of pharmacy work experience and occupational inheritance provide the conceptual approach to career preferences in this paper. Exploring the extent to which pharmacy students' career intentions are the product of occupational dispositions formed by anticipatory socialisation to the profession gained prior to entering higher education, the paper presents evidence that pharmacy career choices are socially located and constructed through social interaction such as working in a pharmacy practice environment. From a macro perspective, concepts such as opportunity structures are viewed as important in explaining perceived 'horizons of action'[20] in career trajectories, with the paper considering evidence that male and female students' career choices are gendered and reflect existing occupational segregation, and are likely to be influenced by perceptions of gendered appropriate courses of (career) action.

Paper 4: Using learning outcomes for undergraduate pharmacy education to assess final year students' perceptions of their preparedness for pharmacy practice

Socialisation via institutional habitus is again implicit in the theoretical standpoint taken here in this paper. The model of learning outcomes is based on that used in medical education research, and views preparedness for clinical practice as comprised of preparedness for competence in the performance of pharmacist-role tasks as well as of preparedness for a professional attitude or approach to those tasks. Differences in students' perceptions of both groups of learning outcomes at an institutional level – even after adjusting for differences between student populations at each school – suggest that socialisation varies greatly between schools, and is likely to have been influenced by the institutional habitus. Whether these differences in perceptions reflect real differences in preparation cannot, however, be determined by the study.

2.4 Chapter summary

Reading the summaries of the published work above, the role of habitus (institutional and/or family) in socialisation to the profession emerges as a key concept adopted by the papers; this, together with perceptions of the kinds of career opportunities available that construct 'horizons of action'[20] in career trajectories, are central to the thesis' approach to understanding pharmacy careers. Empirical evidence of these concepts in the pharmacy practice and higher education literatures are discussed in the next chapter.

Chapter Three

3.1 Overview of the chapter

Where Chapter Two provided the theoretical context to the published work, this chapter provides a review of the empirical context. Various literatures that shed light on pharmacy students' motivations to study pharmacy are described here, with the main focus being literature on why students choose to study pharmacy and on how pharmacy students' career perceptions and expectations are formed – fields of enquiry in which the published work are located.

However, because the published work contributes to some under-researched areas and hence aims to begin to meet gaps in the literature, it is difficult to draw exclusively on pharmacy practice research when exploring the empirical context to the submitted publications. For this reason, research unpacking influences on students' decisions to enter higher education – conceptualised as the starting point of a pharmacist's career – is also included in the literature review.

The chapter draws on how career choices and expectations may be related to, and influenced by, (anticipatory) socialisation and habitus, and considers the extent to which choice, or agency, is constrained by structured socioeconomic, gender and ethnic social relations. In so doing, the overall aim of this thesis – to explain aspects of pharmacy careers ranging from undergraduate education to (expectations of) careers in practice – is addressed in relation to the empirical background to the published work.

The chapter is structured in relation to a number of research questions, beginning with questions related to students' motivations for participating in undergraduate pharmacy education; questions that follow this relate to students' career trajectories through pharmacy school.

3.2 Motivations for studying pharmacy

Career decisions made about whether to enter higher education (HE), and what course to study, are conceptualised in this chapter as the first stage in a pharmacy career. Research questions related to this choice are considered first in this chapter, such as how, when and where decisions are made. The extent to which this early career choice is viewed as an individualised activity or the product of opportunity structures are also reviewed here.

Aside from reporting a range of non-financial and social benefits associated with participating in higher education – such as findings that engagement in HE promotes engagement in community and civic activities[95] – much writing about career choices at the stage of entry to higher education assumes that the decision to proceed to HE is a rational one based on the anticipated returns to investment in career capital derived from a 'graduate premium'[96] earned in the (graduate) labour market. Given these returns, the answer to the question of why young people choose to study for any degree seems self-evident: it allows for the long-term maximisation of their economic position and insulates against downward social mobility.[97] Certainly, HE expansion in the UK has been driven at least in part by a recognition that the wider graduate employment opportunities that result from participating in HE are a good thing, not least because improved employment opportunities provide for economic growth.

But viewing entry to HE as a rational and largely economic decision assumes that when young people are faced with making a decision about their future careers they choose the option that allows them to yield the highest utility based on the (careers) information they have. Critics of this theory of rational career choice point out that it is impossible to have either the perfect information or understanding of the likely consequences needed to make perfectly rational decisions, and that, furthermore, the relationship between information and decision-making is far from straightforward,

because decisions are made within a social context that is constructed by habitus.[19;98;99]

Moreover, differences in socialisation arising from different family habituses mean that some young people acquire expectations to enter (or not enter) higher education that are aligned with what is acceptable 'for people like us'[19;61] based on 'what is 'reasonable' to expect', be that 'an impossible, possible, probable, normal or banal future'.[18] The role of a family's social class in determining what is reasonable for young people to expect, educationally, can be seen in several studies of students' motivations for higher education participation in which career decisions are effectively constrained by differential social class dispositions,[19;98] with students from middle class families viewing going to university as something 'people like us always did' and where choice takes place 'in a context of certainty'.[19] This certainty contrasts with the experiences of working class students (and especially working class minority ethnic students), who, if they are to attend university, must distance themselves from their family habitus – where there is no tradition of higher education – and forgo a 'normal [class] biography'[100] in order to enter higher education.

Further evidence of HE decision-making being a product of – and as reproducing – structured social class inequalities has been reported by a study of applicants for places in UK higher education that found socio-economic background had a significant impact on the decision to enter HE, with almost half of students from managerial and professional backgrounds compared with less than a quarter of those from routine and manual occupational backgrounds stating that they had chosen to apply for HE because 'it was the normal thing to do' and was as natural a next step for them as the transition from primary to secondary education.[101] Socialisation via family habitus to the possibility or inevitability of participating in higher education can also be seen in the higher incidence of participation in HE amongst those students whose parents had also attended university,[101] as familial advantage is transmitted through the inheritance of cultural capital

accrued by the HE participation of previous generations. Where the social inheritance of cultural capital also provides anticipatory socialisation to an occupation or profession – that is, where it also provides occupational inheritance – this familial advantage of transgenerational participation in HE is even greater.[23]

It is not only social class that is relevant to understanding how, where and when career choice occurs: gender and ethnicity also constrain decisions about higher education and careers. Thus it has been noted that although overall students are most likely to be motivated to choose courses because of an interest in the subject to be studied or for career-related reasons, both female and those from minority ethnic (ME) groups are more likely than males or white students to choose HE courses with at least some consideration of their vocational direction.[101] The preferences of both female and ME students for vocational courses can be seen in the 'cultural clustering'[101], or over-representation, of these groups in undergraduate health professions courses, and especially in pharmacy.[99;102;103]

Gender inequality in information about HE has also been found, with females more likely than males to report shortfalls in information, and ME students more likely than students from the majority ethnic group to report needing more help and advice in choosing a course of study.[101] Lack of information about HE is commonly put forward as an explanation of under-participation in HE by young people from working class groups. But evidence that the type of information – informal vs. formal or 'hot' and trusted vs. 'cold' sources of information[98] – valued in making career decisions varies according to students' socio-economic background and cultural characteristics calls into question a focus on information as a neutral conduit and tool in career decision-making.[19;98;100] In fact, recent research suggests that the key features of choice for a large proportion of young people are that it is made 'on the basis of restricted knowledge of options, limited information about alternatives and [takes place within the

context of] culturally-constrained adhesion to the norms and values of…immediate social networks'.[101]

In the light of these findings of structural, socio-economic and cultural constraints on choice, to what extent do studies of the decision to enter pharmacy school highlight the ways that choice is a complex and socially-located activity? Are habitus, sources of information, and social (and/or occupational) inheritance viewed as influential? What roles are preferences, gender or ethnicity constructed as playing? Looking at the pharmacy practice literature, as Hassell[104] comments, few studies acknowledge the ways that family habitus and career preferences may restrict choice, and little attempt is made to explore how some courses may be constructed by students and their families as more or less appropriate 'for people like us'.[61] What is apparent is that motivating factors for studying pharmacy prior to entering HE are largely consistent with findings from research exploring students' choice of HE course more generally, in that choice of course is cumulative, in terms of earlier subjects studied at A-level, that career aspirations reflect perceived structured occupational opportunities, and that gender and ethnicity are important.[101] Hence studies by Booth,[12] Gleeson[15], Rascati[105] and Wilson,[99] as well as my own longitudinal research about pharmacy careers,[103;106] have all found that prior (pre-HE) education plays an important role in the career-deciding process. Being interested in a course based on the fit between its substantive content and subjects studied at A-level, and students' perception that they are 'good at science', are frequently cited as a reason students choose to study pharmacy.[12;25;99;103;106-108] This emphasis on academic scientific ability is both reinforced by and a product of undergraduate pharmacy admissions structures that demand high scores on measures of scientific ability – such as A-levels or grade point averages – as a prerequisite for entry to pharmacy school.

Having a clear career plan – operationalised in the literature using a range of variables which include: having a desire to study a vocational (health-

related) course offering good (and/or a range of) employment opportunities/employment arrangements but especially future self-employment prospects, wanting to work in a respected healthcare profession, wanting the job security provided by the profession – is another motivating factor in the decision to study pharmacy.[14;15;25;99;103;105-108] The relative importance of the different aspects of career plan related decision-making varies between studies, and between subgroups within the samples, but studies consistently report that self-employment prospects are an important motivator for men, especially those from minority ethnic (ME) groups, even as structural changes in community pharmacy have resulted in falling opportunities for entrepreneurial careers.[13;99;103;107] There is also substantial evidence that some groups of students – most typically those from ME groups – are considerably less likely to have a clear pharmacy-specific career plan – the 'failed medics'.[12;13;99;103;106;107;109]

Less consistent are findings related to whether female students choose to study pharmacy and have defined their career goals in response to perceived labour market opportunities in the profession for part-time and flexible working. Several recent studies of British and American pharmacy students have found that females are significantly more likely than males to be motivated by flexible working opportunities within the profession;[99;103;110-112] older North American and British studies have found part-time employment opportunities both *are* more likely to influence female students in their initial decision to study pharmacy[13;14;107] and that there is *no link* between gender and opportunities to work part-time.[105] The reason why females are (or might be) motivated to choose a pharmacy career by perceived occupational, and structured, employment opportunities for flexible working is not clear; Wilson et al[99] suggest that, following Hakim's preference theory,[113] female students are motivated to study pharmacy because it is an occupation that allows its workers to 'fit paid work around their domestic role, rather than vice versa',[113] with career choice reflecting a preference for work that allows family-building to be prioritised over career-building. Yet a study of nursing – an occupation Hakim claims women choose on the basis of the opportunities it provides for flexible working that

fits around a preferred home-centred role – has found that nursing careers are not entered on the basis of a preference for flexible working.[114]

Because there are currently no studies that have set out specifically to investigate the relationship between work and lifestyle preferences and motivations to study pharmacy it is difficult to determine the extent to which career choice based on preferences for particular patterns of work on graduation are the product of perceived labour market constraints or opportunities or the product of habitus; however, given that a number of recent studies have found that many pharmacy students and practitioners (male and female) do not anticipate either working as a pharmacist on a full-time basis until retirement, or working for the same employer in the country in which they trained,[32;99;103;106;115] it is possible that findings related to female students' motivations for a pharmacy career that are grounded in a preference for flexible work also reflect wider and more fundamental change in attitudes to work and work values.[116] Certainly, there is evidence that career decisions are increasingly likely to be influenced by lifestyle factors such as the desire for a balance between life in and outside work that is characterised by preferences for flexible or non-standard working patterns,[117-120] a finding that is especially true of female students' career preferences.[121]

Other reported influences on pharmacy career choice are more socially and contextually located, and demonstrate the ways that career decision-making takes place within differently delimited 'opportunity structures'[122] and within different 'horizons of action'.[20] Here, for example, social capital accrued through knowing a pharmacist, such as having a pharmacist in the family, is important,[13;103;105;108;123] as are cultural capital provided by occupational inheritance,[123;124] anticipatory socialisation to the profession provided by pharmacy work experience,[99;103] encounters with pharmacists in a pharmacy practice environment,[12] and encouragement from parents.[99;107] These different kinds of social and cultural resources provide different kinds of (partial, informal and 'hot'[98]) information about pharmacy careers and

help to construct students' dispositions towards and views of pharmacy as acceptable 'for people like us'.[19;61] Given that young people who lack these social and cultural resources are effectively prevented from making these kind of socially 'embedded' and well-informed choices – and are characterised in the HE literature as 'contingent' choosers[100;125;126] – social and cultural capital are obviously important in structuring differences in perceived 'horizons of action'[20] of career opportunities.

Despite this evidence of the influence of cultural and contextual factors on the processes of career-deciding, few studies consider the ways that social inheritance or access to resources reproduces inequalities in career opportunities; rather, there is a tendency to focus on descriptive accounts of preferences that, inevitably, by their nature cannot account for the observed 'cultural clustering'[101] of female and Asian students around pharmacy as a subject for study at university in theoretical terms. The paper submitted in this thesis on pharmacy career-deciding[1] begins to address this; situating career choice within participants' biographies, it draws on how occupational awareness associated with anticipatory socialisation and cultural capital acts as a resource that may push or pull young people into studying pharmacy. The paper also illustrates the ways that the decision to study pharmacy is a complex and at times contradictory process, a finding that might explain the sometimes inconsistent conclusions reported by the literature reviewed in this chapter. Results of the research reported in my paper also suggest that because the processes and practices involved in career-deciding vary, students enter pharmacy school with varying levels of information about and commitment to studying pharmacy – for example, narratives of career choice presented in the paper include accounts of 'failed medics' who have transformed constraints on choice (rejection from medical school) into positive stories of pharmacy career opportunities – as well as a range of dispositions towards the course and the profession, that may be influential on their future pharmacy careers.

Reflecting on findings from my own research and those in the pharmacy practice literature, a number of further questions also worthy of inclusion in this review chapter are raised. Specifically related to the effects differences in dispositions, cultural and social capital, prior knowledge and career awareness might have on career trajectories beyond the point of entry to HE, and how these trajectories are influenced by experiences of pharmacy education during higher education, these questions are explored next.

3.3   The influence of higher education on career development

What happens to students once they begin their undergraduate pharmacy careers is reviewed in this section of the chapter, with questions such as how experiences of higher education influence pharmacy school students' career plans and career development and the extent to which career outcomes such as withdrawal from the MPham can be explained by differences in students' characteristics or institutional habitus considered.

An understanding of the impact of key variables on pharmacy students who enter pharmacy school with different motivations, preferences and cultural capital, and on the range of experiences they encounter and are able to take advantage of, provides insight into factors influencing early career trajectories. The starting point in addressing questions of influences on the relationship between higher education experiences and pharmacy career trajectories is research that takes as its object of concern students' experiences of higher education and the influence these experiences have on their future career plans.

In direct contrast to the extensive literatures on the process of choosing to participate in HE and choosing a particular course of study there is much less evidence regarding how career plans might develop and/or change during higher education. What research there is suggests that, in general, career plans of students on vocational courses such as pharmacy are likely to be reinforced by experience of HE.[127] Thus studies have found that

occupational socialisation provided by work experience, practice placements and contact with pharmacists during the MPharm influence students' career choices during their undergraduate education,[15;99;128] most likely as a result of experiential learning opportunities reinforcing career plans during undergraduate pharmacy education. However, just as some students' career plans may be reinforced by experience, others may change their plans during the course of the MPharm. In this context, for example, there is evidence that while the majority of pharmacy students enter pharmacy school with a definite career plan, around a third of students change their plans between their first and fourth years of study, most commonly by rejecting an initial preference for employment in the industrial sector of the profession.[99] Yet by the time they reach the final years of the MPharm evidence from my longitudinal research suggests many pharmacy students' career plans have stabilised.[3]

While it is difficult to determine the extent to which career plans are influenced by undergraduate pharmacy education, we do know that during the course of the MPharm they become closely aligned with existing occupational segregation. Thus studies consistently report a preference of female students to work in hospital and males in community pharmacy on graduation.[3;99;102;103;107;129] The reasons gender and ethnic niches develop in an occupation are not well understood in pharmacy, but some of the implications of labour market segregation in terms of career trajectories include inequality in career development.[25;26;107;108]

Other research on possible career trajectories concerns students who make unsuccessful transitions into higher education, with attention especially paid to identifying factors related to the withdrawal (attrition) of students from higher education. To an extent much research involves an elaboration of Tinto's theory of academic and social integration,[130] where these two arenas of HE experiences – academic and social – are conceptualised as determining both expectations of, and decisions to remain in or withdraw from, HE. The important point to note here is that while in Tinto's view it is

the interactive effects of social and academic integration that relate to individuals' career decisions of continuance or withdrawal, students' background characteristics and attitudes are constructed as key in determining relationships between (both academic and social) integration and retention. Research in this tradition is established in medical education and has tended to focus on questions of academic rather than social integration, and typically explores questions such as whether gender and ethnicity are related to attrition,[131] or aims to identify students likely to lack the ability to succeed academically. Here, research aims to establish the extent to which A-level or other exam scores on admission can predict subsequent academic integration and continuance at medical school.[132-134]

Examples in the pharmacy education literature include a study demonstrating the crucial role of literacy skills in the progression of Australian students through their pharmacy degrees, especially amongst students whose first language is not English,[135] and research from the United States investigating the relationship between academic performance/achievement prior to entering pharmacy school and subsequent continuance in, or academic performance at, pharmacy school.[136-139] In the UK there is no such tradition of pharmacy education research investigating factors associated with persistence or attrition from the MPharm; the paper presenting completion rates of UK pharmacy students submitted in this thesis is unusual in this context, and indicates that both student characteristics (gender, whether an overseas student) and institutional factors are relevant for explaining why some students may be more at risk of not completing their course than others.[2] Finally, while not concerned with explaining attrition from the MPharm but rather with explaining outcomes of the MPharm (including attrition of pharmacy graduates from British pharmacy practice), longitudinal research indicates that student characteristics and academic performance during the MPharm are significantly associated with registration to practice pharmacy in Great Britain.[33;34]

Investigating attrition using a range of analytic techniques, Hassell's work,[2] together with my longitudinal research exploring the extent to which entry to the pharmacy labour market can be predicted by (amongst other things) undergraduate experiences,[33;34] both adopt a more multi-variate, sociological approach to explaining the many likely influences on educational outcomes, such as student persistence, than most published studies in healthcare education literatures. Research that is even more directly informed by this approach can be found in other HE literatures, where non-completion is conceptualised in terms of complex social processes of preparedness for university life and compatibility between a student's choice of course/institution and the institution's choice of them.[140] In common with studies of the processes of HE choices, attrition can be explained in relation to structural inequalities, with an obvious source of inequality being the processes of preparing students for university, where students with the cultural capital to 'fit in' – typically those with the social inheritance accrued through their parents' participation in higher education and/or those who view university as something 'people like us always did' and hence who have already experienced socialisation that disposes them to succeed at university – are less likely to withdraw from their course of study, while first generation HE students without appropriate cultural capital or social capital are more likely to find themselves on the 'wrong' course with the risk of drop-out that that brings.[100;140-142] In this context, it is hardly surprising that students lacking in HE capitals are likely to be from lower socioeconomic classes. And this socioeconomic disadvantage is reinforced as these students are more likely to need to engage in paid employment while studying and consequently have less time to be involved in the kinds of extra-curricula activities that provide access to networks that might enable them to accrue capital.[127;143]

The economic necessity that drives working class students to engage in paid employment, that results in disadvantaged students having both less time to spend studying (impacting on their academic integration) and less time to integrate socially in an environment that they are already more likely to find unfamiliar and unsettling, is not the only factor associated with

socioeconomic background, social exclusion and withdrawal. The decision to leave a course of study has also been linked to the institutional habitus of the university.[19;29] Because the institutional habitus prioritises and values particular practices – those of the dominant social classes – students from family habituses that predispose them to different values and practices are likely to feel uncomfortable and undervalued by the institutional habitus and as a result may be more inclined to withdraw early from HE.

Withdrawal or attrition as a result of experiences of higher education has an obvious and immediate effect on students' career trajectories. Whether this occurs as a result of a failure to integrate socially or academically, because of persistent and constraining socioeconomic inequalities, or is the product of an institutional habitus that fails to equally value and support all subgroups of students, the career outcome is the same.

Yet this outcome – withdrawal – is not the norm: the majority of (pharmacy) students do not leave their HE courses but continue their undergraduate education. Questions about the influence of HE on students' perceptions of their preparedness for their future careers are explored in the next section.

3.4   Preparedness for practice

Whether students feel prepared for future practice is likely to impact on their expectations and experiences of their early careers in practice. For this reason, the final research question reviewed in this chapter considers evidence of how prepared pharmacy students feel for practice and the extent to which context (institutional habitus) influences these perceptions.

Educational preparations for practice are key in providing graduates with the necessary knowledge, skills and attitudes for their careers.[144] Yet the extent to which graduates feel prepared educationally by their course for future roles is something that has received little attention in the pharmacy

education literature, with the exception of the paper submitted in this thesis[4] and two studies using similar measures.[145;146] All three studies report some similar findings: namely, that students on the whole feel prepared for a range of competencies necessary for pharmacy practice. Where my submitted paper differs from the other studies is in its sample size – it's larger – which made it possible to explore subgroup differences between students on the basis of school attended and student characteristics. Given my work suggests that differences exist between subgroups it would appear that it is important to undertake studies that are large enough to allow for subgroup analysis of the data.

What remains unexplored in the literature is the reasons why pharmacy school attended might influence variation in perceptions of preparedness between students attending different pharmacy schools.[4] The question is particularly relevant given findings that pharmacy curricula are formally similar and based on a pre-defined set of learning outcomes.[145;147] Similar differences in outcomes have been reported between graduates of different medical schools.[148;149] As has been noted throughout this thesis, the institutional habitus is important in establishing the culture of pharmacy school; in this context variation in students' perceptions of their preparedness may be linked to the different cultural norms and practices that students encounter in the various schools of pharmacy.

3.5 Chapter summary

This chapter has reviewed the empirical context to the published work. In reviewing the literature, the chapter has followed the career trajectory of students as they move from making a decision to progress to higher education, and then subsequently choose to study pharmacy at university, through their undergraduate education until its end point four year later from which they reflect on their student career and the extent to which it has prepared them for their next career stage – that of pharmacy practice.

Based on the evidence presented here, several findings are noteworthy. First of all, it appears that while there is evidence that students' motivations for studying a degree in general and pharmacy in particular are varied, few studies focus on the interplay between career choice and the broader socioeconomic context in which career decisions take place. The lack of studies focusing specifically on unpacking relationships between motivations to study and preferences for particular working patterns, or on the ways that social inheritance reproduces inequalities in career opportunities, means that there is little pharmacy practice research contextualising career deciding in relation to socialisation via family habitus, a gap in the literature one of my own papers[1] begins to fill.

Questions related to the influences of experiences of higher education on career trajectories have also been reviewed in this chapter, with attention focused on stability and/or change in career plans during the course of pharmacy school and on exploring evidence of factors related to withdrawal (attrition) of students from HE. In this context, the role played by the social inheritance of cultural capital that enables students from economically advantaged families to better 'fit in' with the institutional habitus of higher education institutions has been found to be important in the literature. Once again, with the exception of the contribution made by papers submitted in this thesis,[2;3] these are under-researched topics in pharmacy practice.

The role of undergraduate education in preparing students for practice is another aspect of the pharmacy undergraduate career that is examined empirically in the chapter. Here, even more than is the case with the other literatures reviewed in the chapter, evidence is scant, although once again socialisation experiences provided by institutional habitus are likely to be influential. Thus my own paper[4] again contributes to an empirically limited field of enquiry.

In the next and final chapter some of the implications of findings from the papers are considered.

Chapter Four

4.1 Overview of the chapter

Drawing in particular on the scope and originality of the work presented throughout this PhD, in this final chapter of the thesis the strengths and limitations of the published work are discussed. The chapter also considers the policy implications of findings for pharmacy undergraduate education providers, pharmacy employers, pharmacy workforce planners, and the pharmacy regulator. While some of this will be evident from much of the discussion in Chapter One and from reading the thesis more generally, the chapter aims to bring together findings related to career choice and factors influencing career trajectories and to discuss these findings in relation to the policy contexts. The chapter concludes with an indication of some areas for future research based on reflections on the main findings of the published work.

4.2 Strengths of the published work

The strengths of the published work lie in its importance and originality, since much of the published work is novel in its methodology and its theoretical approach and has contributed to academic scholarship in a number of ways. It has laid the foundation and served to inform other commissioned research on professionalism amongst newly qualified pharmacists and an investigation of the pharmacist registration examination. A briefing paper commissioned by the Department of Health has been used to inform policy debates related to undergraduate pharmacy education and preregistration training.

More specifically, the published work is important because it has established the ways that the social context in which career choices are made and the social context in which undergraduate careers are experienced influence career development trajectories. Thus through the application of the concept of socialisation from symbolic interactionism and Bourdieu's concept of habitus this thesis has shown, uniquely, that whether

thinking about early pharmacy career choices or variation in outcomes of undergraduate education it is important to consider a range of influences on these choices and the inequalities that are reproduced by and manifest in any choices.

Furthermore, in examining undergraduate pharmacy careers through the lens of a range of sociological constructs and by bringing in empirical evidence from a number of different fields of enquiry, the published work has demonstrated the strength of producing theoretically informed rather than descriptive accounts of careers in order to offer new insight into understanding undergraduate pharmacy careers.

In addition to providing a thorough and theoretically informed approach to, for example, investigating the ways that macro, structural constraints such as labour flexibilisation shape career trajectories, there are several other ways in which the research is original. It is original in terms of the depth and breadth of research questions considered by the papers. For example, the research questioning motivations for choosing to study pharmacy and a career in pharmacy provides an in-depth account of the ways that family habitus and dispositions define horizons of action in career-deciding; this contrasts with the breadth of analysis undertaken in addressing research questions related to (factors associated with) attrition from the MPharm, which included an investigation of data from a number of sources, including UCAS (University Central Admissions Service) and the Royal Pharmaceutical Society of Great Britain in order to explore attrition.

The published work is also original in that it is linked thematically. In part this is because much of it has been undertaken either to inform or within a programme of longitudinal research about pharmacy careers. This longitudinal programme of research is methodologically unique in pharmacy, and is the largest pharmacy workforce study commissioned in Great Britain. The longitudinal research has been robustly designed and

rigorously conducted in order to address its aim to establish the extent to which aspects of early career choices and decisions are related to subsequent participation in, and commitment to, the pharmacy labour market

4.3 Limitations of the published work

It is important in any research to identify limitations, in both research designs used and in the theoretical frameworks applied, which might affect the processes of data collection, analysis and interpretation of findings.

An important limitation in the research design is that the papers submitted in the thesis are not confined to research on a single group of subjects, although two of the four papers report findings from the same longitudinal programme of research that is tracking the same cohort of subjects. While the results produced by the cohort study research, and their interpretation, cannot be assumed to be generalisable or necessarily applicable to other cohorts of pharmacy students the breadth and depth of insight provided by the cohort study in general and by the published work in particular is a valuable addition to the evidence base.

Because the published work contributes to under-researched fields of enquiry, it is difficult to compare the results of my work with that published elsewhere or to determine the relative validity of the theoretical frameworks applied in the thesis.

4.4 Policy implications of the published work

Applying sociological approaches in order to explore my research questions has produced findings important for informing policy and relevant to higher education providers; for example, where the regulator responsible for determining and accrediting the content of undergraduate pharmacy

curricula might want to consider whether it is acceptable for students to feel unprepared for some aspects of professional practice on graduation, HE providers perhaps would benefit from reflecting on their institutional habitus and from identifying any shortcomings in systems designed to support non-traditional students.

Other findings, such as those that perceived structural opportunities and constraints influence students' motivations to enter higher education (and to study pharmacy) and also inform their career intentions are significant for workforce planners in particular, since preferences for non-standard work patterns such as part-time work have implications for those involved in modelling pharmacist supply. With specific reference to career trajectories that develop during undergraduate education the findings from the literature and from the published work provide evidence for the basis of interventions in student support and in providing greater exposure to pharmacy practice while studying for an MPharm.

Policy implications for those who employ pharmacists can also be inferred from the published work. Here it may be important for employers to consider whether pharmacists have experienced anticipatory socialisation to the profession, as it appears that students' future career intentions, expectations and career commitment can be predicted by exposure to and experience gained in a pharmacy practice environment prior to entering pharmacy school.

4.5 Directions for future research

The published work contributes to a number of under-researched topics of enquiry, many of which could constitute the basis for further research. For example, the research reported raises some important questions regarding the ways that gender and ethnicity influence 'horizons of action' in career choice that would benefit from further empirical exploration. The published

work also clearly highlights a need for research that measures the impact of inequalities in socioeconomic background on future career success**.**

Further work is also required on undergraduate pharmacy education. The lack of literatures evaluating the products of curricula, such as studies of graduates' preparedness for practice, or of studies evaluating differences between the graduate products of different pharmacy schools, would be useful.

Finally, given that the published work focuses on the very earliest stages of a pharmacy career future research examining the influence of anticipatory socialisation to the profession on career trajectories in practice would be invaluable.

Chapter Five: The published work

Paper 1: Willis SC, Shann P, Hassell K. Pharmacy career-deciding: making choice a 'good fit'. Journal of Health Organization and Management 2009;23(1):85-102

Pharmacy career deciding: making choice a "good fit"

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Abstract

Purpose – The purpose of this article is to explore factors influencing career deciding amongst pharmacy students and graduates in the UK.

Design/methodology/approach – Group interviews were used to devise a topic guide for five subsequent focus groups with pharmacy students and graduates. Focus groups were tape-recorded, recordings transcribed, and transcripts analysed. Key themes and interlinking factors relating to pharmacy career deciding were identified in the transcripts, following a constructivist approach.

Findings – Participants' described making a "good fit" between themselves, their experiences, social networks etc. and pharmacy. Central to a coherent career deciding narrative were: having a job on graduation; and the instrumental advantage of studying a vocational course.

Research limitations/implications – Focusing on career deciding of UK pharmacy students and graduates may limit the study's generalisability to other countries. However, our findings are relevant to those interested in understanding students' motivations for healthcare careers, since our results suggest that making a "good fit" describes a general process of matching between a healthcare career and personal experience.

Practical implications – As we have found that pharmacy career deciding was not, usually, a planned activity, career advisors and those involved in higher education recruitment should take into account the roles played by personal preferences and values in choosing a degree course.

Originality/value – A qualitative study like this can illustrate how career deciding occurs and provide insight into the process from a student's perspective. This can help inform guidance processes, selection to healthcare professions courses within the higher education sector, and stimulate debate amongst those involved with recruitment of healthcare workers about desirable motivators for healthcare careers.

Keywords Pharmacology, Students, Careers, Decision making, Focus groups, United Kingdom

Paper type Research paper

Introduction

Workforce shortages in many health professions have been reported around the world (see Hassell *et al.*, 2002; Simoens *et al.*, 2005; Duckett, 2005; Buchan and Edwards, 2000). Targeted recruitment drives in the USA and the UK aimed at alleviating these shortages have encouraged migration from resource-poor, developing countries, but are ethically problematic in that the migration of healthcare workers from developing countries impacts on these countries' capacity to deliver health care (Stilwell *et al.*,

2004), and have the potential to reverse the health gains in some countries that have accrued over the past decade.

One alternative to moving healthcare workers from one place in the world to another is to increase the supply of workers locally, by increasing the numbers of healthcare workers in training. In recognition of this, the number of places for students to study medicine (Higher Education Funding Council for England, 2001), dentistry (Gallagher *et al.*, 2007), pharmacy (Hassell *et al.*, 2007) and nursing (Royal College of Nursing, 2005) in the UK higher education (HE) sector have increased, with, for example, the number of students entering the pharmacy undergraduate course increasing 60.7 per cent over the decade leading up to 2004 (Hassell *et al.*, 2007). While this HE expansion was largely fuelled by the recognition of an increasing need for health professionals, especially in the context of changing patterns in the provision of health care in the UK and ever-rising demands for more services from an ageing population (Miers *et al.*, 2007), the consequences of providing additional opportunities for young people to study for careers in the healthcare professions have seldom been researched. There is, however, speculation that the growing number of student places may require higher education institutions to lower their entry requirements to fill these places in the future (Hassell *et al.*, 2007), and that students from non-traditional backgrounds may be motivated to choose health professions degrees such as medicine so that the socioeconomic background of these future health workers more closely reflects that of the UK population (McHarg *et al.*, 2007).

What is needed, then, is empirical research to explore the motivations for choosing to become a health worker, from a student's point-of-view. Are students motivated to study professional subjects because of the "instrumental advantage" (Purcell *et al.*, 2005), or future economic gains, these courses provide? Evidence from a large-scale study of UK graduates suggests that students enter higher education with a wide variety of views and expectations (Purcell *et al.*, 2005), with the belief that higher education improves employment prospect being most widespread. However, during qualitative interviews with a sub-sample of this cohort of graduates it emerged that many had been motivated to undertake undergraduate study by intrinsic, course-specific reasons: that is, they were motivated because they found learning a particular subject intrinsically satisfying.

With the aim of exploring motivations for choosing to study pharmacy and a career in pharmacy, this paper examines the narrative accounts given by UK pharmacy students and pharmacy graduates when asked explicitly to explain why they had made these choices. We were also interested in uncovering the extent to which these accounts made reference to the nature of pharmacy work, given that pharmacists' in the UK work in a variety of settings, with the majority being employed by high street pharmacies (70 per cent) and in the public sector in National Health Service hospitals (22 per cent) (Hassell *et al.*, 2006). We know from previous studies that in addition to opportunities to earn a high income and favourable employment prospects, the nature of the work, flexible working, early exposure to pharmacy work, pharmacy's status as a profession allied to medicine, a wish to be involved in health care, and a desire to continue studying scientific subjects studied at A-level are major motivators explaining why students had chosen to study pharmacy or a career in pharmacy (Booth *et al.*, 1984; Shindler *et al.*, 1988; Gleeson *et al.*, 1993). Furthermore, international work exploring the social factors motivating students towards a career in pharmacy

found that a combination of factors influenced the career aspirations of pharmacy students (Ferguson *et al.*, 1986), with both intrinsic factors – that is, factors that focus upon the content and the task involved in doing a job, and the opportunities it provides for self-expression and actualisation, such as wanting to study an intellectually satisfying course – together with extrinsic factors – or those not inherent in the nature of the tasks of the occupational role, such as financial rewards – accounted for students' selection of a higher education programme/course.

There is further evidence that motivations for entering undergraduate pharmacy education are related to contextual factors, such as gender and ethnicity, as well as to social relationships, such as the roles played by family members in influencing career-making decisions. For example, gender differences in relation to the instrumental value given to choosing to study pharmacy have been reported by several studies (Hassell, 1997; Ferguson *et al.*, 1986), with male students found to be more likely to study pharmacy because of opportunities to maximise potential returns via expected future high earnings or self-employment, and female students more likely to be influenced by the opportunity to work flexibly in the future (Shindler *et al.*, 1988; Hassell, 1997). Students' decisions to study pharmacy have also been shown to be influenced indirectly, by family and familial ties (Koda-Kimble *et al.*, 1989) – and this influence was reported to vary according to students' ethnicity, with Asian females being more influenced by family ties when compared with white students. Prospects for business ownership and occupational inheritance have also been found to be a significant motivator for studying pharmacy amongst some ethnic minority groups (Hassell, 1996; Hassell, 1997; Carlson and Wertheimer, 1992).

There is one final contextual factor related to motivations for entering pharmacy – original career preferences. Here, ethnic minority pharmacists have been found, on the whole, more likely to have not chosen pharmacy as a first choice of undergraduate degree course (Hassell, 1997). Many have commented that "failed medics" entering pharmacy may be less likely to be satisfied with their subsequent pharmacy career than those for whom pharmacy was a first choice of degree course (Hassell, 1997; Platts *et al.*, 1997; Crompton and Sanderson, 1990; Booth *et al.*, 1984).

What is clear from these findings is that students' motivations for participating in higher education are complex, and that choosing an undergraduate course is a socially located process that may involve more than just the student, because students may be influenced by their family (Booth *et al.*, 1984), and/or by others around them, and especially by knowing a pharmacist personally (Fergusson, 1986; Carlson and Wertheimer, 1992; Rascati, 1989), or by working in or visiting a community pharmacy (Booth *et al.*, 1984). Yet establishing what influences and shapes students' decision to study pharmacy – and more generally what influences their choice of pharmacy as a career – is rarely acknowledged as being complex by these studies, nor is career choice conceptualised as a process which may occur in the context of external pressure or involve the resolution of conflicting demands (Hassell, 1999). Furthermore, the studies discussed here were designed to measure, quantitatively, the influence of a range of factors on career choice, and the extent to which these influences may be mediated by gender and ethnicity, but they are limited by a lack of data on how and why these factors come to be combined and interrelated in the career deciding process – data which is more typically derived from qualitative studies.

Clearly then, there is a need to provide qualitative evidence on pharmacy career deciding, and to identify key issues relating to choosing a career in pharmacy. There is also a need to update existing research, since in 1997 the pharmacy degree in England and Wales changed from a three-year bachelor degree course, followed by a one year pre-registration period and a national registration exam, to a four-year course leading to a master of pharmacy degree (also followed by a pre-registration year and national examination). Since the four-year course is designed to allow students to gain more exposure to clinical and professional pharmacy earlier than was previously possible, and is designed to prepare students to deliver pharmaceutical care, it is possible that alongside the curriculum changes, students' pharmacy career deciding may have changed too.

Taking as a starting point choosing to apply for an MPharm course, we conducted a series of focus groups with pharmacy students and recent pharmacy graduates. Focus groups' strength is in researching ill-defined topics (Barbour, 2005), and we felt given the lack of qualitative data on choosing a career in pharmacy since the change to the four-year programme, this was an ideal research method. In the focus groups we held, we asked participants to describe the process of pharmacy career deciding. Our intention was to use participants' narratives to explore how they made this process meaningful (Rhodes and Brown, 2005). Using narratives as a form of data, the ways that people make sense of experiences by interpreting and infusing events with meaning can be explored. Narratives provide a temporal order to events that reduces complexity and ambiguity out of what may be, in fact, quite a disorganised process. In the data presented in this paper we illustrate the ways that various factors are combined in narratives to construct a framework for understanding why participants chose to enter pharmacy school and a career in pharmacy.

Our analysis of participants' narratives recognises that focus groups are social spaces in which participants co-construct pharmacy career deciding by sharing, contesting and creating narratives about choosing pharmacy (Lehoux *et al.*, 2006). Factors discussed as influencing this choice reveal the groups' normative understandings about pharmacy career deciding (Pfeffer and Laws, 2006) and establish common ground between participants. And because focus groups involve interaction between participants, points of conflict and uncertainty reveal (alongside the points of agreement) factors that are valid and factors that are invalid elements in a pharmacy career-deciding story.

As well as providing an understanding of the rationales, processes and contexts shaping participants' decision to study pharmacy, we also aimed to use the focus group data to design a questionnaire that would enable us to quantify, in a separate study, how many pharmacy students held certain opinions about the processes of choosing to enter pharmacy school and a career in pharmacy. Focus groups have a history of being used in the preliminary stages of a project, such as here where they were used to help us in developing a questionnaire – typically, they are used to ensure that the questions being asked in a survey are appropriate and easily understood, that items included in a survey are inclusive and that these are contextually relevant (Barbour, 2005). Using focus groups in this way, though, has been found to neither compromise the quality of any qualitative findings from the focus groups or to diminish their validity in producing standalone results for publication (Barbour, 1999). The questionnaire designed from analysis of the focus group data was the first survey from A

Longitudinal Cohort Study about Pharmacy Careers, a five-year study tracking the career choices and expectations of the 2006 cohort of GB pharmacy graduates funded by the RPSGB's Pharmacy Practice Research Trust. Some results from this survey have been reported elsewhere (Willis *et al.*, 2006a,b,c).

Data presented in this paper reflect various constructions of the processes of choosing to study pharmacy and a career in pharmacy. These constructions are discussed as examples of a "matching" metaphor, which relates to the ways in which different elements come together to make a good fit between the person, their history, experiences, their wider social networks etc. and a pharmacy career (Inkson, 2004). These narratives represent constructions of sense-making, incorporating sometimes chance occurrences or unplanned events (Bright *et al.*, 2005), to create structures through which experience is ordered, providing a sequence and meaning in which reality (choosing to study pharmacy and a career in pharmacy) is reflexively constructed through discursive action.

Findings are presented here in relation to the development of a framework for constructing an analytical model of the process of pharmacy career deciding. The development involved, initially, some small group interviews. These were followed by the focus groups. From an analysis of these data, first, a working model was devised, and secondly, a conceptual model was designed. We conclude with a reflection on our results that draws out both the implications for the profession of the process of pharmacy career deciding and on the methodological issues raised by using focus groups for this kind of research.

Methodology

Before beginning the focus groups for this study we conducted four small group interviews with pharmacy students. Data collected from these group interviews were used to design a schedule or question guide for the focus groups. Participants for these group interviews were purposively sampled so that some groups that may normally be under-represented in qualitative research (such as minority ethnic males) were included.

Analysis of the transcripts from these preliminary group interviews revealed that choosing a career in pharmacy often involved multiple factors, many of which had been reported by earlier studies. Choosing pharmacy as an undergraduate course was generally described by participants as being a vocational course that shared many qualities with medicine. Choice was considered, in part, to be determined by a good fit between subjects studied at A-level and course requirements for studying pharmacy. Participants also felt having a professional identity had been an important factor, and that flexibility was key, since many – and especially minority ethnic female – participants felt that it offered choices in both where they worked (the sector) as well as choices in when (the hours) they worked. Business opportunities were more important amongst male students. This thematic analysis was used to construct a working model of pharmacy students' reasons for choosing to study pharmacy and a career in pharmacy (Figure 1).

However, when it came to conducting the focus groups, we did not discuss this model, as we did not want to constrain participants' discussion. Rather, we were looking to see how, and which of, and the ways that, the factors describing pharmacy career deciding were combined in participants' narratives.
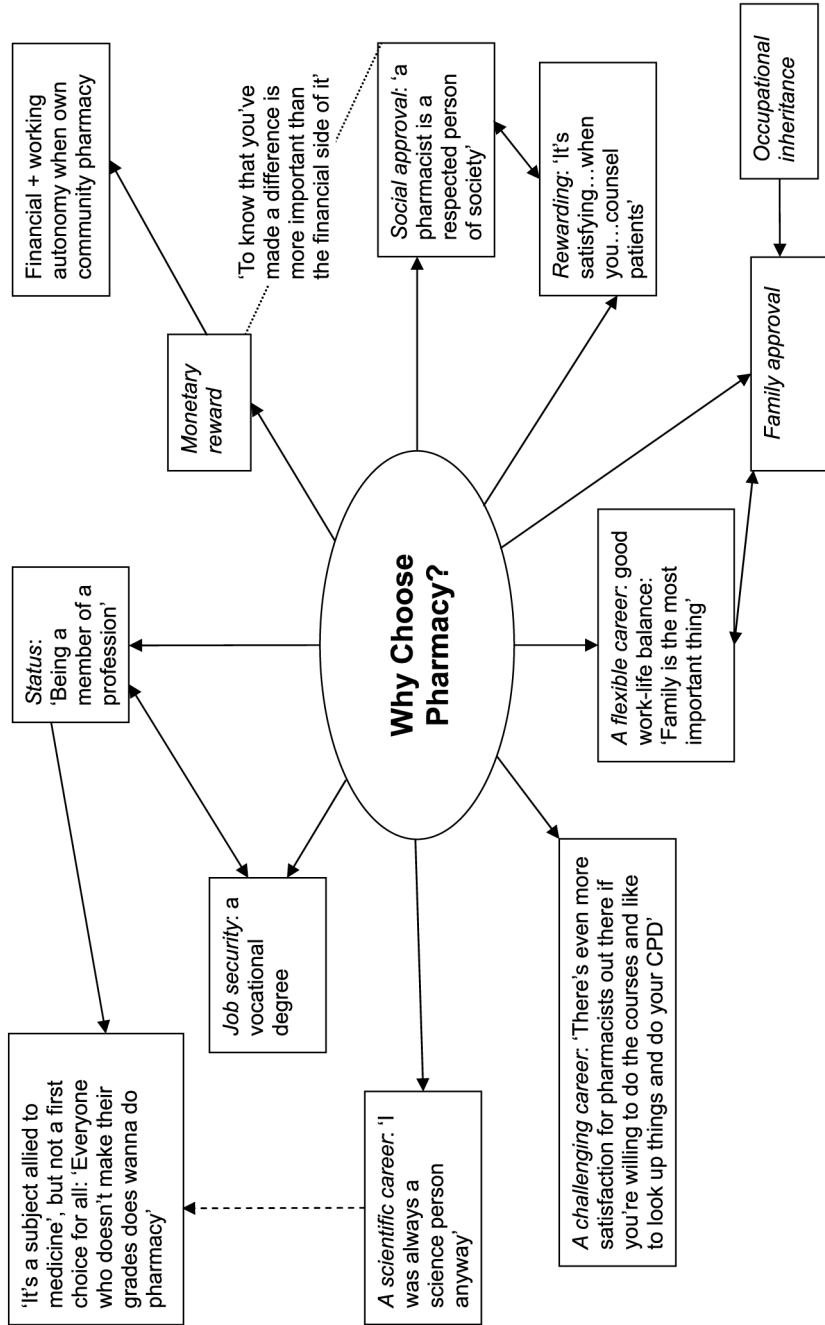
Figure 1.
Working model of
pharmacy students'
reasons for choosing to
study pharmacy and a
career in pharmacy

Five focus groups were held between June and December 2004. Because we felt that students were likely to have different views or experiences depending on the stage of the pharmacy education they were at, we conducted the focus groups with the following groups: first-year undergraduates who had just begun their pharmacy higher education (one group) – narratives of participants from this group are accompanied by the letters UY1; fourth-year undergraduates who had completed their final examinations but had not started their pre-registration training (one group) [UY4]; pre-registration trainees who had just begun their training (two with trainees undergoing training in hospital pharmacy [HPPR in the results] and one with community pharmacy pre-registration trainees [CPPR]). The sampling criteria for group composition was developed in order to obtain possible differences in perspective on career deciding: for example, we hypothesised that first year students might have different, or perhaps more unfocussed career intentions, but might recall more factors influencing their decision to study pharmacy, than the graduates.

The mean number of participants in the focus groups was eight. Almost three-quarters of those attending the sessions were female, reflecting the trend reported by recent analysis of the 2005 Register of Pharmaceutical Chemists (Hassell and Eden, 2006), and analysis of contemporary pharmacy workforce patterns, of a progressive entry of women into the profession (Hassell *et al.*, 2002). Female narratives are pre-fixed "F" in the results, male narratives "M". Homogeneity in group composition in terms of age and stage in pharmacy education meant that participants had a number of shared characteristics which we hoped would contribute to establishing some common ground between participants that would act as "social glue" during the discussions (Lehoux *et al.*, 2006). However, we recognise that in qualitative research representative sampling is methodologically problematic, and that participants' narratives are necessarily located in their own experiences (Pfeffer and Laws, 2006).

As the participants were drawn from different populations, we used a variety of recruitment methods. Undergraduates studying at a Northern School of Pharmacy were invited to attend a focus group by the first author of this paper, who attended a lecture and explained about the research. The final-year students were approached in a similar fashion – they were also attending the same northern school of pharmacy as the first years. Many of the pre-registration trainees had already consented to take part in piloting of A Longitudinal Cohort Study about Pharmacy Careers, and were approached using this database of contacts, although additional participants were recruited through pre-registration training study days. The trainees were graduates of eleven Great Britain schools of pharmacy.

The focus groups were conducted in a neutral location, and at a time convenient to participants. Prior to attending their focus groups, participants were told what the study was and what their involvement would involve. Each session began with an introduction, during which the focus group facilitators once again explained the purpose of the research, and guaranteed those present their anonymity and confidentiality. Although a topic guide was used to structure the focus groups, open discussion of issues important to participants was promoted. Participants were encouraged to exchange stories about pharmacy career deciding rather than address themselves to the facilitators. The interaction was then used both to generate data and as part of the analytical process (Davidson *et al.*, 2006). All focus groups were audio taped and transcribed verbatim. Field notes were also taken during the focus groups,

and analysed after each focus group, so that certain questions could be modified and certain themes pursued further, following a grounded theory approach (Glaser and Strauss, 1967). Refreshments and incentives were offered to those taking part.

Analysis of the transcripts initially involved the authors reading them independently. During this reading, key themes and issues arising from the narratives were drawn out, and interlinking factors relating to pharmacy career deciding were identified. We subsequently compared our analyses and agreed upon appropriate coding and interpretations of the data, following a constructivist or interpretivist approach (Schwandt, 1998).

Results and discussion

Focus group participants described the process of pharmacy career deciding by bringing together many different factors, and combined these in narratives combining social relationships with personal aspects:

> I always wanted to do something like in healthcare but I wasn't sure which. My brother did medicine, I saw how hard he had to work and I thought to myself "I can't do that", so you know medicine was out for me. And then I always liked chemistry . . . at "A"-levels . . . and I thought pharmacy's got chemistry in it. I went to an open day after that and, you know, they sold it as "oh you can do this" [laughs] and "you can do that". I thought, "yeah that's for me" (M:CPPR,1).

Career deciding stories were not about the single-minded pursuit of a career in pharmacy as an individual, but about continuity between social networks (in the example above, it's a sibling) and the individual. Beginning with events in the past – the brother's experiences of medicine – this narrative uses past events and choices to make sense of choosing pharmacy, and combines them with other actions so that studying pharmacy appears inevitable, a good fit between their personal values and career intentions, and hence "for me" (Ezzy, 1998). Rather than presenting his choice as planned, predictable and the result of a logical pathway from GCSEs, through "AS" and "A"-levels to higher education, this participant frames his choice of undergraduate course and subsequent career in relation to interpersonal and intrapersonal experiences.

While the factors included in this narrative – a desire for a career in healthcare, the good fit between subjects studied at A-level and pharmacy course content, and attending an open day – are not presented in his narrative as having a rank order of influence on his decision, the narrative does follow a format that begins with general, but personally meaningful, events in the past, has a middle episode, and finishes with specific events that occurred in the more recent past. This structure provides an organised interpretation of a sequence of events and gives a temporal order to what would otherwise be a series of chaotic events (Bleakly, 2005). The structure, in effect, transforms a set of unrelated messy events into a story, which makes sense for both the narrator and for the other members of the focus group (and, of course, for the researchers).

Central to this transformation of messy events into a coherent career deciding narrative were two factors: the prospect of having a job on graduation; and the instrumental advantage of studying a vocational course. These two factors appeared consistently in participants' descriptions, across all five focus groups:

> I kind of wanted to remain in the sciences though, I guess there's security there, you come out with a guaranteed job, and . . . it's better doing something than nothing . . . so, pharmacy, that's why (F:UY4,4).

For many, studying a vocational degree was fundamental to their decision to enter higher education, and the decision to study pharmacy was contextualised in relation to a list of other, possible, vocational courses they might have chosen:

> I did science A Levels and while I was doing my A Levels, I thought I'd better choose what career path I wanted ... Considered dentistry. I was quite keen on veterinary science at one point ... And I came to pharmacy ... And the course appealed because it sounded interesting and also I fancied doing a vocational degree (F:HPPR,2).

It was in the context of discussing other possible vocational, healthcare courses, but especially medicine and dentistry, that the process of choosing pharmacy was frequently located. But the deciding factor was usually that there needed to be *a* job at the end of studying, rather than *a particular* job: "*It just seemed like a good idea to go into something*" (F:HPPR,6 [emphasis added]).

Discursive constructions of rational choice were present in many descriptions of the process of pharmacy career deciding that included these two factors, indicating the extent to which an economic model of participation in higher education had entered the everyday narratives of choice amongst pharmacy students and graduates: many rationalised their decision to study a vocational degree in terms of the returns on their investment in studying for four years, and believed that pharmacy was "Gonna provide me with financial security" (F:UY4,3). The frequency with which these two factors appeared in participants' descriptions shows the ways that these factors represent culturally acceptable components of narratives about choosing to study pharmacy – and that they are examples of the repertoire of sanctioned stories that can be used to interpret experiences of pharmacy career deciding.

Central to creating a personalised account of a good fit between pharmacy, their life histories, and factors influencing their decision to study pharmacy were stories about themselves and their relationships with others. Many accounts incorporated affective and emotionally charged experiences, a finding resonating with motivations for choosing careers in social work and nursing (Parker and Merrylees, 2000):

> Ok, my interest in pharmacy first of all started off when my sister was actually diagnosed with leukaemia and she was a patient at the local children's hospital and because my brother was ill at the time, I had to be a carer for her. And I noticed that there was a lot of drugs involved with the treatment, so I was in direct contact with a pharmacist as well cos I had to like, know what drugs and dosages she had to take. So from there I found it [pharmacy] quite interesting (F:UY1,4).

This narrative also works to create an impression of a student who is a good person, morally, who has taken responsibility for caring for a sibling, and who has a "good" story to tell about positive career modeling that led to her choosing a career in pharmacy (Goffman, 1967). And with having responsibility and patient contact contributing largely to job satisfaction amongst pharmacists (Hassell *et al.*, 2006), we might assume that this student is likely to be highly motivated, to be satisfied with their choice of career, and to be committed to a career in pharmacy. But other events introduced later in this person's narrative suggest very different factors were also involved in her decision to study pharmacy: she in fact applied to study medicine first and did not get accepted. As a "failed medic" the impression is of a student whose reasons for choosing to study pharmacy are not so morally "good". The combination of these two (good and not-so-good) factors in this narrative illustrates the way that

influences on pharmacy career deciding that may appear as contradictory can be combined and abstracted in a way to explain a particular situation that makes sense to participants and produces sensible results from a qualitative study.

While the combination in motivations to study pharmacy cited above makes it difficult to predict which factors might be more influential in determining whether she is satisfied with her career choice in the long-term, amongst others taking part in the study failing to get the right grades for their first choice of undergraduate course was explicitly linked to their dissatisfaction with pharmacy as a career choice:

> I had my heart set on doing dentistry, cos they earn lots of money, its not long hours like doctors, so it's quite good, quite a new appealing profession. Unfortunately, I didn't manage to get the grades…and the only thing left was pharmacy unfortunately. [Laughs.] So I actually had to go through clearing, cos I didn't put pharmacy down as one of my choices… I'm not very happy, I think I'm quite disappointed with my career choice to be honest (F:CPPR,2).

The implications of this story, when it is decontextualised, is that participation in higher education via clearing may be linked to a lack of, or low, future satisfaction with a career in pharmacy.

Furthermore, in the above narrative, the description of career deciding can be seen as incorporating factors influencing her choice to study dentistry, such as the pay and working conditions to construct a good fit between her career intentions and dentistry: a consideration of a career in pharmacy is largely absent from this process, and the speaker laughs to hide her embarrassment that "the only thing left was pharmacy". But this attempt to correct a potentially bad impression created by being a "failed dentist" is rewarded by other stories from members of the same focus group that also used humour to describe similar experiences of mistaken or difficult career deciding choices:

> Originally, actually it's quite sad, but I wanted to be a doctor. [laughs] Don't ask! I did actually want to be a doctor because I wanted to do a career in medicine, and the obvious choice when you're sort of 16, well, the only one I know that's concerned with medicine's a doctor. And then when I was about 17, was about [to] choose my uni place, I actually did some work experience in a . . . not-named hospital [sic], and I saw what the doctors looked like after certain shifts, and they had their eyes drooping halfway down there, they were absolutely tired, and I looked at them and thought, "No, I don't, I don't wanna get to that stage in my life where I'm so tired I could literally just fall over and not know I'd done it." And so after that I started thinking, well, what else can I do? And it was actually a friend of mine who . . . was applying for pharmacy and said "Well, why don't you try pharmacy?" And I didn't know much about it, but I went along to the open days and I found out more about it, and I thought, well, why not? So that's the reason I chose pharmacy (F:CPPR,1).

Work experience was constitutive of this narrator's decision not to pursue a career in medicine. Amongst others, work experience played a positive, and pivotal, role in pharmacy career deciding. In many narratives work experience was conceptualised as bringing pharmacy to life, and making it fit well with other factors influencing their career deciding:I always wanted a job in the medical profession but I didn't really know what kind of jobs were available…and then I got a job in a community pharmacy and I'd never even thought about doing pharmacy before that, and then I just really enjoyed it (F:HPPR,7). However, while acknowledging the role it had made in his decision-making process, another member of this group challenged the impression of pharmacy he had been given by his work experience:

> I think . . . you can possibly go and get the more saccharine view from doing work experience because I chose pharmacy on the strength of the experience I had. Whereas you don't really get to see [it's] boring when you're just in the dispensary (M:HPPR, 8).

Discussion of some factors created disagreement over whether they had played a role in an individual's pharmacy career deciding: most frequently, this was whether their family had influenced or encouraged them in their career choice. In the focus group with the fourth year undergraduate students, the general consensus was that "It helps when you've got a pharmacist in the family, because you know what to expect". However, for one student present, the influence of her family was absent from her career deciding:

> I didn't have anybody, didn't know anybody who was a pharmacist, never knew anybody who'd been to university and done pharmacy, it was like well, I didn't really understand half of it, so it was all a bit of guesswork (F:UY4,1).

Families were conceptualised as providing cultural capital (Hodkinson and Sparkes, 1997) in some accounts of a good fit between pharmacy and their career choice, providing information about pharmacy that was located in their family background and ethnicity:

> I just went for pharmacy. My mum was quite keen. I don't know . . . Asian parents are quite like healthcare profession, pharmacy's quite good, it's, you know, [a] well respected job, pay's all right, and you know, my sister's done it so they were quite happy for me to (F:CPPR,2).

Being able to draw on either work experience or family networks were important resources for many participants in the focus groups. And for many, it was in the interplay of the family and its wider social networks, together with aspects of their identity such as their ethnicity, that pharmacy career deciding was constructed – that is, within a particular habitus, a system of values and a certain ethos transmitted by the family (Bourdieu, 1977; Bourdieu, 1990). This complex interplay between ethnicity and family dynamics has been noted elsewhere in UK studies of the influences on participation in higher education of minority ethnic students (Connor *et al.*, 2004).

Gender differences in descriptions of pharmacy career deciding were also apparent from analyses of participants' narratives. For many females, factors contributing to construct a good fit between their personal work values and a career in pharmacy drew on a concept of pharmacy as a flexible career:

> I think being female as well, it's a good job because it means you can go off and have kids and still work a few hours (F:UY4,2).

Work values (values that individuals believe should be satisfied as a result of their participation in work) have been theorised as being the primary variables that influence the career deciding process and career satisfaction by some commentators (Brown, 2002). Amongst females in our study, work values were often prioritised in terms of their relative importance when making decisions about the kind of healthcare career they wanted, with the career myth that pharmacy appeals to women because it offers flexible working conditions – and hence is a good job for a woman – present in many accounts (Leal-Muniz, 2005). This myth has been identified elsewhere as a factor influencing women's decisions to enter the profession (Gidman *et al.*, 2007). Gendered career myths about pharmacy were constructed to describe the profession in relation to

a good fit between working conditions (that is, opportunities for part-time and locum work) and life outside work:

> I actually met a locum in one of the shops that I worked in, and she worked it down to a T. She managed to kind of stay self-employed, but still work for one shop for just a few days a week. She was still getting the money in and could still be off when her daughter was off or whatever ... I hadn't realised how well you can work it down to exactly how you want to work (F:UY12).

Career deciding narratives showed some variation between first year and graduate accounts of the process. First-year students were positive about their decision:

> I chose pharmacy cos I thought it was one of the highest job opportunities I can get...I had a wide range of A levels available to me. I could have done quite a lot of stuff (M:UY1,3).

They also described opportunities for pharmacists to have expanded roles and to work abroad as influencing their decision:

> The profession offers a lot more to do in the future, for example you can go abroad, you can work, and that's what appeals to me the most about pharmacy ... Another thing about pharmacy is that you can work in hospital I like the interaction between the doctors and the pharmacist so ... And compared to other, all the other courses – optometry, medicine, dentistry – this seemed a really good job to do in the future, obviously we're gonna get the rights to prescribe and that kinda thing. So there's a lot of future for pharmacists, lots of expansion in the field as well. And that's always a good thing to enter into, cos I think we've entered at the right time and that's about it really. Money's good as well (F:UY1,4).

This optimism regarding their future working life and idealistic conceptualisation of pharmacy's occupational identity was not found amongst pharmacy graduates. Changes in perceptions of a health profession over the course of undergraduate education have been documented in relation to dental (Skelly and Fleming, 2002), nursing (Day *et al.*, 1995) and occupational therapy students (McKenna *et al.*, 2001). Medical students, too, have been found to have increasingly negative perceptions about their chosen career over the course of their undergraduate education as they become increasingly aware about organisational aspects of medical work (Simpson, 1993). Thus, pre-registration trainees taking part in our study did not describe future career opportunities as having influenced their decision to study pharmacy. Rather, the prevailing good career stories from graduate participants tended to focus on events that were personally meaningful, instead of on abstract conceptualisations of developments for pharmacy in the future. In fact, we would argue that this conclusion about the centrality of personal experience in career deciding applies to all the narratives given by those taking part in the focus groups – and hence we suggest that personal experience lies at the heart of pharmacy career deciding. For this reason, our model pharmacy of career deciding as a "good fit" situates personal experience as being central to choice but recognises that this process also involves combining various factors that are mediated by a student's values (Figure 2).

Conclusion

In this paper we have argued that narratives of pharmacy career deciding are constructed out of a combination of factors, values – and, centrally, this decision is conceptualised as being located in personal experience. Rather than involving
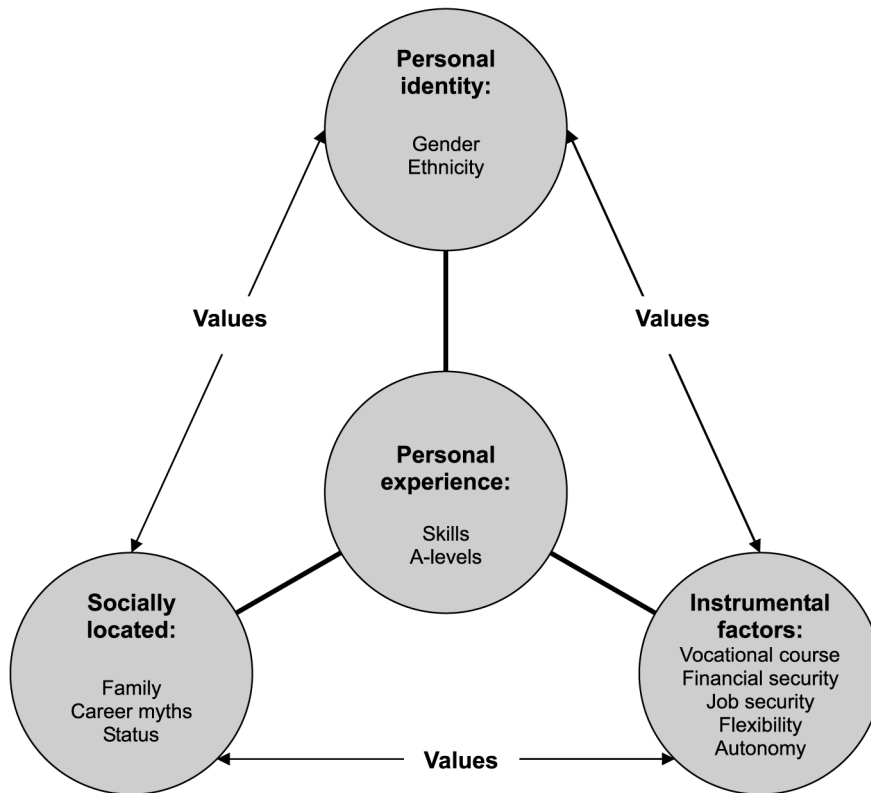
Figure 2.
Model of pharmacy career
deciding as a "good fit"

descriptions that conceptualise career deciding as if it occurred via a series of planned steps along a uni-dimensional logical pathway, we have shown the ways that narratives are both grounded in the personal but also constructed out of general factors such as the perceived instrumental advantage to be gained via studying a vocational course, to make a "good fit" between a student, their history, experiences, and their wider social network. The narratives vividly portray this construction as interactive and interconnected (Esbroeck *et al.*, 2005).

Viewing pharmacy career deciding as a dynamic process of interconnecting events, values, influences etc. marks a departure from previous studies thath have sought to quantify the impact of a range of factors. Our description of this process as career deciding emphasises our understanding of "choice" as a process that takes place over time rather than as something that is made only at the time of completing an application form for higher education. Viewing this "choice" as influenced by contextual variables, we have been able to unpack, through qualitative research methods, the importance of being able to draw on resources such as work experience or family networks to inform career deciding. These contextual factors, which can also be considered in terms of access to cultural capital, constitute the particular habitus, or value system, within which career deciding takes place (Bourdieu, 1977, 1990).

Recognizing career deciding as a process rather than a single event, it is important to note the value of experience of working in or exposure to the work of pharmacists. Many of the focus group participants viewed work experience favourably, as it offered them an (albeit limited) opportunity to learn about the profession and its occupational identity.

Of course, the narratives we have presented in this paper are retrospective re-telling of events that have been constructed by participants to make sense out of their pharmacy career deciding. Chance events do not figure too strongly in these accounts, which may not be surprising given the focus group participants' young age. But there is a sense that for many, pharmacy career planning was not, in fact, a planned activity, but incorporated both predictable and unpredictable events. This suggests that career advisors can have a positive impact on students' early choices, helping them to make meaningful and informed decisions that take account of personal preferences and values. Good advice at an early stage may transform future descriptions of pharmacy career deciding from the sometimes haphazard accounts we encountered into a process that is viewed more positively.

From the narratives discussed in this paper it appears that students are more likely to legitimate their choice of a career in pharmacy in terms of a rational, economic model of participation in higher education, rather than in relation to the nature of pharmacy work. Few made reference to the occupational identity of pharmacists or to the kind of career – such as working for a chain of pharmacies or in the NHS – they imagined having. Rather, it appears that career deciding was not focused beyond higher education.

Other narratives of career deciding – such as that of the "failed medic" – also occurred infrequently. We accept that, in part, discussions in focus groups reflect a collective view and that some positions and experiences may remain unarticulated because participants are reluctant to bring narratives that are unique. This may be a methodological limitation of the study, since the group dynamics of a focus group may mean that group norms are articulated and experiences of career deciding which are more marginal such as being a "failed medic" may be silenced (Kitzinger, 1995). Yet because we heard some of these narratives of pharmacy as a second career choice, we can be reasonably confident that we have captured a range of attitudes and experiences relating to pharmacy career deciding.

That a small number of participants would have preferred another course indicates that studying pharmacy was an outcome for some that was not, really, an expression of choice. Not pursuing an original occupational goal is often assumed as causing subsequent dissatisfaction with the second choice career. Yet there is evidence from other studies of young people's experiences of career choice that a period of "cooling out" helps those who are diverted into a career path they did not initially choose to eventually reconstruct their experiences as a positive choice (Colley, 2003; Roberts, 1995; Wrench and Qureshi, 1996). In the context of these other studies, it has been found that both the job is transformed into the right one for an individual and, at the same time, an individual is transformed into the right person for the job. Such a transformation appeared in the account given by one of the pre-registration trainees who described making a mistaken career choice as "Originally, actually it's quite sad, but I wanted to be a doctor!"

While "cooling out" to construct pharmacy as the right career choice only occurred infrequently in focus group participants' accounts, the most widely held factor

influencing career deciding was that students were motivated to study pharmacy because of the job security the profession offers. This finding suggests that pharmacy students and recent graduates have more in common with dental than medical students (Crossley and Mubarik, 2002), since dental students are more likely to have been motivated by status and security than medical students. Clearly then, pharmacy is not the only choice for a student who is interested in studying a vocational healthcare professions course, but the desire for job security may also provide a strong motivator for staying in pharmacy.

But how sustainable is job security in the future? Given the growing number of locums on temporary contracts, and the expansion in pharmacy schools and hence student numbers, it appears that pharmacy jobs may well become less secure. Perhaps if the study were to be repeated in the future, students will describe pharmacy-career deciding using a different set of narratives.

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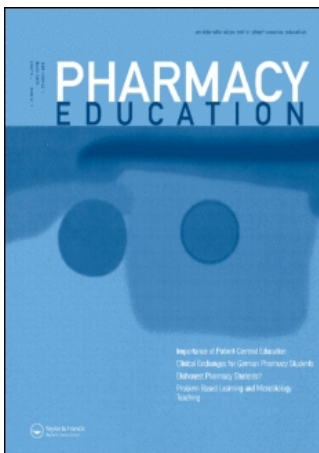
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The UK pharmacy degree: Attrition rates and demographics of non-completers

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PLEASE SCROLL DOWN FOR ARTICLE

The UK pharmacy degree: Attrition rates and demographics of non-completers

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Abstract
Introduction: While it is known that a significant proportion of students within the higher education system do not graduate as expected, knowledge about student attrition in pharmacy is limited. A greater understanding of attrition rates will allow workforce planners and policy makers to estimate the number of new pharmacists that can be expected to join the register each year.
Aim: This paper aims to provide information on attrition among pharmacy students in the UK.
Method: Data are collated from a range of sources to explore trends or patterns in attrition according to factors such as gender, institution and student type.
Results: Between the years 1994 and 2000 overall attrition reached a peak (19%) in 1997, although time series analysis found no significant trend ($p = 0.612$). Attrition rates vary by institution, overseas compared with home students and male students compared with females are at greater risk of dropping out.
Conclusion: Changes to the way in which student data are collected are recommended, as it is currently difficult to track a cohort with absolute certainty. Nevertheless, the paper draws attention to the extent to which attrition from the pharmacy degree occurs, enabling workforce planners to estimate future intake onto the professional register.

Keywords: *Attrition, completion rate, MPharm, pharmacy, Schools of Pharmacy, UK*

Introduction

Workforce shortages in the pharmacy profession, and their consequences (recruitment problems, vacant posts and curtailment of services), have been much debated recently (Hassell, Fisher, Nichols, & Shann, 2002; Scott, 2002). Lower levels of labour market activity among the existing workforce, and in particular the work patterns of the increasingly large proportion of women in the profession, has been identified as a major contributor to the current supply problem (Hassell et al., 2002). Others have argued that the lack of pharmacists entering the profession has also contributed to staff shortages (Audit Commission, 2001).

While there are workforce supply shortages, it also appears, counter-intuitively, that the number of students being accepted onto pharmacy courses has increased annually for several years now, with some researchers identifying a 30% increase between 1998 and 2003 (Wilson, Jesson, Langley, Hatfield, & Clarke, 2006). In fact, largely because of fears about shortages, the number of schools of pharmacy in the UK, after a considerable period of stability, has risen to a total of 22 (http://www.pharmacycareers.org.uk/). Moreover, during the next few years it appears that an increasing number of institutions will start to offer the MPharm degree to prospective students. Although the number of new pharmacy schools that will begin to operate remains to be seen, the pharmacy student population looks set to rise (Taylor, Bates, & Harding, 2004).

While raising the student intake is clearly one obvious solution to addressing shortages in the profession, one problem is that there is little published

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information about completion rates for pharmacy students. Nor is it readily apparent what proportion of graduates complete their pre-registration year and eventually join the pharmaceutical register. This means the strategy of increasing undergraduate pharmacy intake is not necessarily well informed and managers with responsibility for workforce planning have no data to inform initial assumptions about what proportion of the original inflow to pharmacy degree programmes translates into entry to the register and then to actual practice.

A recent conference paper highlighted some of the problems associated with a secondary analysis of student graduation and data relating to non-completion of pharmacy degrees—or attrition—and called for further detailed work to explore the nature and extent of this attrition within pharmacy (Hassell, 2005).

Across all courses in general, the UK higher education (HE) system has maintained one of the highest completion rates compared with other major industrialised nations. However, recent evidence indicates that non-completion rates for the UK are now rising. In 1999 statistics gleaned from English HE institutions gave rise to claims that one in four students were dropping out before completing their courses (Goddard, 1999). Lower socio-economic status, mature entry, being from certain ethnic groups, late starting, living at home and being male, are among factors which researchers have identified as being related to non-completion of HE programmes in the UK (Yorke, 1999). While students may drop out voluntarily or leave involuntarily because of academic failure (Tinto, 1982), theories of attrition suggest that it is interrelationships while at university that are critical in determining whether students complete their degree course (Spady, 1970). Social and academic integration, then, prevent students from social or academic failure—that is, they prevent students from dropping out.

The government has also recognised the problem of non-completion in higher education and in 2001, a select committee called for "the Government, HEFCE and to higher education institutions to take action to reduce as far as possible the number of students who do not achieve a recognised qualification" (Select Committee on Education and Employment, 2001).

Against this background then, the aim of this paper is to describe work undertaken to inform the debate within pharmacy, highlighting the extent to which attrition occurs and for whom it is a problem. The paper includes analysis of the number of students applying to pharmacy courses and the numbers being accepted, as well as analysis of actual register data to provide an historical view of annual intake onto the pharmaceutical register; attrition over time is explored, and attrition by student type, gender and school of pharmacy is described.

Method

Data from a number of sources have been used to explore attrition. To describe applications and accepts to pharmacy degree courses, data from the University Central Admissions Service (UCAS) were used. A simple comparison is made between the number of students applying to study pharmacy and the number of students accepted onto the pharmacy degree. These data included only those who applied for pharmacy as a first choice and those who were accepted, excluding those who entered through the clearing route. Unfortunately, recent changes to the way in which UCAS collates application data, which have resulted in applications and accepts for pharmacy being combined with pharmacology and toxicology, mean that it is not possible to provide this information from 2002 onwards.

Data from the Royal Pharmaceutical Society of Great Britain (RPSGB) are likely to give a far more accurate picture of the real growth in student numbers to pharmacy because they represent places *taken up* by new students, so these data are examined as well. Since 1998, the RPSGB has collated pharmacy student numbers using data provided by each of the institutions that run an undergraduate pharmacy degree programme. Data can be accessed about the number of new students each year, the number of students in each of the years of study, and the number of degree awards. Some, but not all of this information, is provided at an institutional level and some of the information is also presented by gender and home/EU or overseas status.

By comparing the number of students who pass the pre-registration examination with the number of 1st year entrants at the start date five years earlier, it is possible to develop a measure of attrition for this period. The pre-registration exam is significant because students must pass the exam and successfully complete a period of training before they can enter onto the RPSGB register of pharmacists. Attrition rates from 1st year entry to pre-registration exam success for 1997–2000 cohorts were calculated using RPSGB figures. Attrition rates for the 2001–2004 cohorts were calculated by using RPSGB figures for the number of 1st years in each of these cohorts and then calculating attrition based on the average attrition rate (9.5%) for the period 1997–2000. A note of caution is urged here, as not all the students taking the pre-registration exam in a given year will have entered at the same point. A small percentage of candidates will be students with an overseas pharmacy qualification who are taking the exam with a view to practising in the UK. In addition, some of the candidates will be retaking the exam: students are allowed to retake up to three times. The same is true of course, of the students on each year of the pharmacy course, with some re-taking a year and therefore not

necessarily belonging to the corresponding year of entry to the programme.

The final data set used was from the Higher Education Statistics Agency (HESA). HESA collects and disseminates data from publicly funded higher education institutions in the UK. Comparative data on the performance of institutions in widening participation, student retention, learning and teaching outcomes, research output and employment of graduates is published online (www.hesa.ac.uk, 2006). Data from HESA is used in the paper to place pharmacy attrition in context.

The limited data were subjected to time series analysis to determine whether any trends over time were apparent in the patterns of applications, entrants and attrition rates. The results of the time series analysis should be approached with caution, however, as it is possible that autocorrelation may exist (Box, Jenkins, & Reinsel, 1994). Autocorrelation describes the correlation between members of a time series of observations. Although the existence of autocorrelation does not by itself bias coefficients, it can result in biased estimates of standard errors and t-tests. Given the limited number of data points in the dataset a decision was taken not to test for autocorrelation or to perform any corrective modelling. Differences between home and overseas students, and male and female students were examined in terms of relative risk (RR). All calculations were undertaken in STATA (v.9) and a threshold of $p < 0.05$ was used to indicate statistical significance.

Results

Number of pharmacists on the RPSGB Register

Analysis of the RPSGB Register indicates that the number of pharmacists joining the Register continues to increase. The proportion of female pharmacists on the Register is rising annually. Table I shows details of the number of pharmacists on the Register between 2003 and 2006 and a gender breakdown of new entrants in the same time period.

Table I. Number of registered pharmacists by year and gender (2003–2006).

Year	2003	2004	2005	2006
The Register				
Male	22,152	22,396	21,193	20,949
Female	24,233	25,182	25,203	26,119
Total	46,385	47,578	46,396	47,068
Entrants				
Male	806	826	837	853
Female	1,340	1,450	1,575	1,751
Total	2,146	2,276	2,412	2,604

Source: RPSGB (2006).

Number of applicants and accepts to pharmacy

UCAS data for the period 1996–2001 for applicants and accepts to pharmacy degrees is shown in Figure 1. The figures show that between 1996 and 2001 there was some fluctuation in the number of applicants each year, although the number fell overall from 1996 to 2001. On the other hand, the number accepted onto the course rose year on year, with larger increases apparent in 1997 and 2001 (figures after 2001 combine pharmacy with toxicology and pharmacology so are not included in the graph).

The figures indicate an overall 3.8% decrease in the number of applicants to UK Schools of Pharmacy between 1996 and 2001, the last year for which accurate data are available. Although there is a mean cumulative decrease of 0.7% each year over the period, the number of applicants fluctuated and the time series analysis suggested that there was no overall trend in the number of applicants to pharmacy ($p = 0.92$).

The proportion of applicants who are *accepted* onto the MPharm rose from 58.0% of all applicants in 1996 to 77.5% in 2001, while the number of accepted applicants increased by 28.4% in the six years shown. The time series analysis suggested a rising trend in the number of accepted applicants over the time period shown ($p = 0.001$).

Students studying pharmacy

Based on data provided to the RPSGB by the individual schools of pharmacy (which are thought to be different from UCAS entrants data above because they are more likely to reflect places actually taken up by students offered a place), the numbers of students entering the pharmacy undergraduate course (Figure 2) has increased over the past few years, from just above 1500 in 1994 to just below 2500 in 2004, a 60.7% increase in student numbers in the decade. Again, time series analysis showed a significant rising trend in the number of entrants to pharmacy each year shown ($p = <0.001$).

Completion of the pharmacy degree: Overall attrition from entry to completion

Figure 3 shows the attrition rates for each of the cohorts entering the pharmacy degree programme in the years 1994–2000. While attrition reached a peak (19%) in the 1997 cohort (the year the pharmacy degree was changed to the four-year MPharm), before falling in 1998 and rising again in 1999 and 2000, time series analysis found no significant trend in the data ($p = 0.612$).

	1996	1997	1998	1999	2000	2001
Number of applicants	3001	2878	3033	3004	3053	2886
Degree accepts	1741	1898	1963	2055	2067	2237
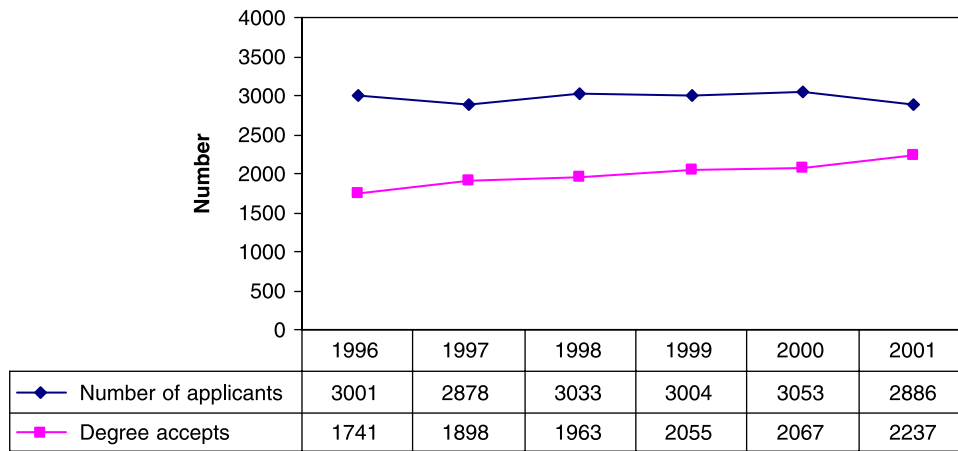
Figure 1.   Applications and accepts to pharmacy 1996–2001 (UCAS).

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Entrants	1538	1618	1743	1753	1797	1857	1934	2056	2113	2242	2472
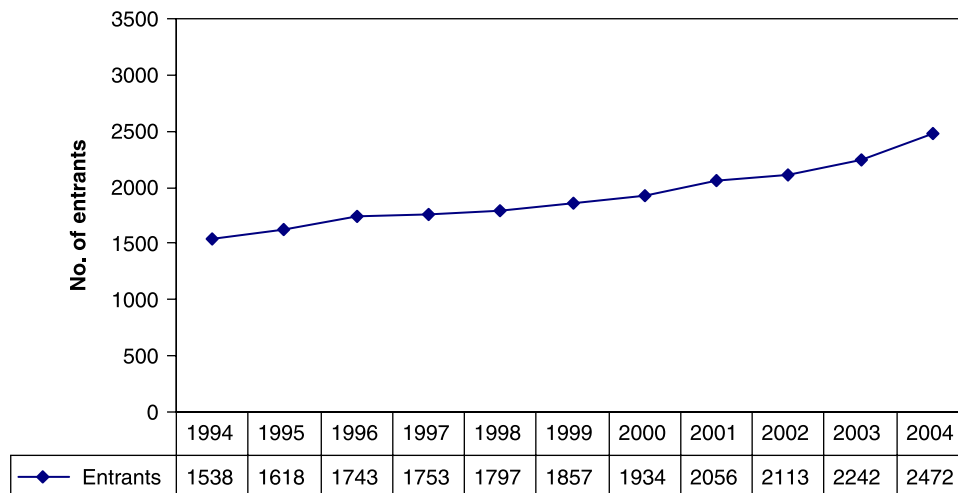
Figure 2.   Number of new entrants to pharmacy 1994–2004 (RPSGB data).
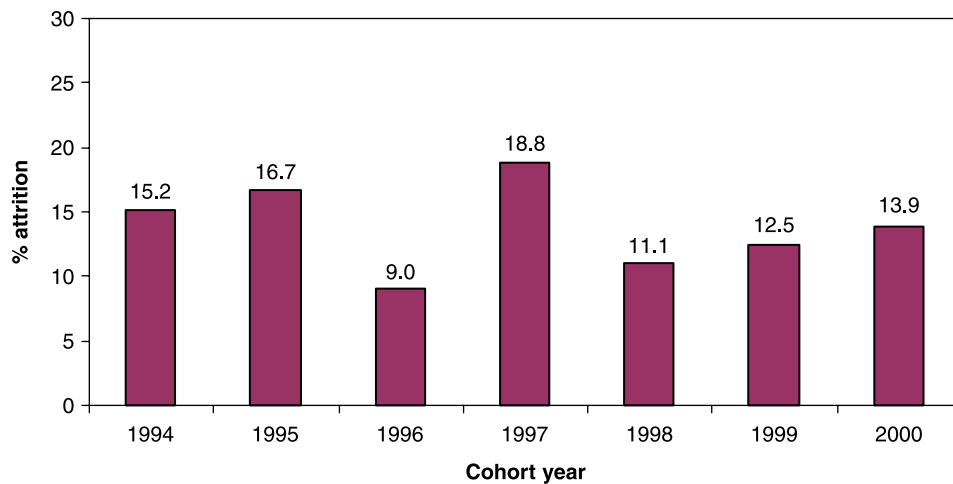
Figure 3.   Attrition rates (1994–2004).

Attrition by institution

Annual attrition varies from institution to institution: this trend is illustrated in Figure 4, which gives attrition by (anonymised) school for the 2000 entry cohort. This indicates that attrition ranges from 3.6 to 35.5% for different schools of pharmacy for this cohort. Institutions which offer a sandwich course were not included in this figure.

Attrition for home/EU students and overseas students

A comparison of attrition rates for home and EU students and overseas students suggests that attrition rates are consistently higher amongst overseas students (Figure 5). Although attrition rates have fallen for overseas students since the peak of 45% in the 1997 cohort, overseas students are still more likely to drop out than their home/EU counterparts. Expressed in terms of RR, overseas students were at

greater risk of dropping out than their home/EU counterparts in all four cohort years shown (2.9, 2.0, 2.6 and 1.4 in 1997–2000, respectively).

Attrition by gender

Attrition rates were also compared by gender. The results in Figure 6 show that male students were more likely than female students to fail to graduate at the end of their course. The average proportion of female pharmacy students gaining a degree between the years 2001 and 2004 was 90.2%, compared with 82.8% for male students during the same period. The RR for male students dropping out compared with female students is 2.5, 1.5, 2.0 and 1.6, respectively, for each of the years shown. Both home/EU and overseas male students have higher rates of attrition than their female counterparts in the 1997–2000 cohorts, mirroring the overall gender split.
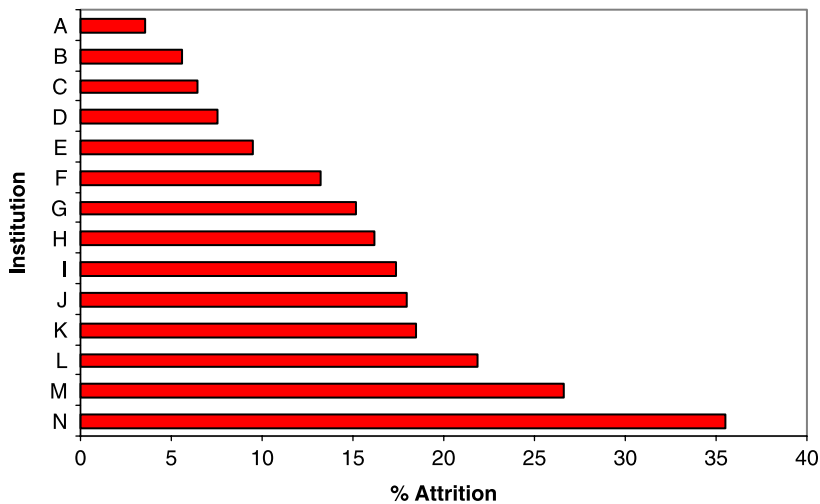
Figure 4.   Attrition for 2000 cohort by institution.
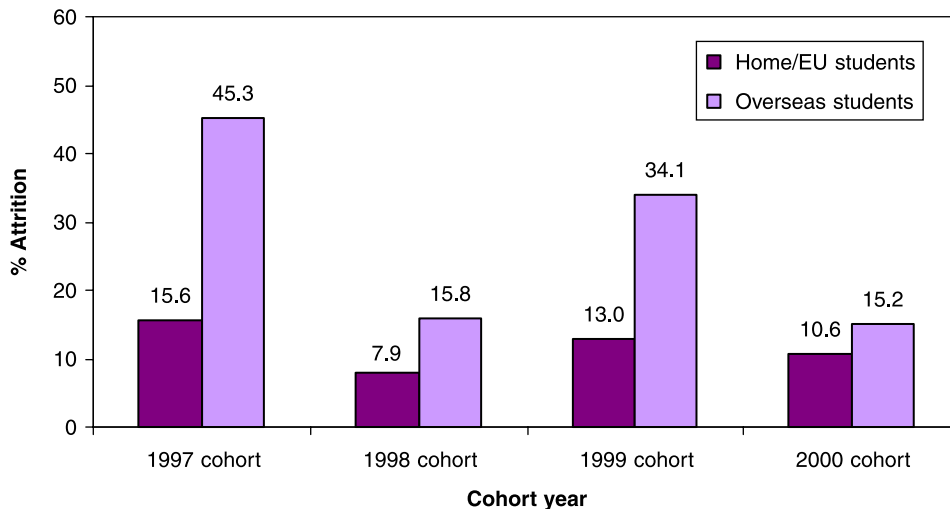
Figure 5.   Attrition rates by student type.
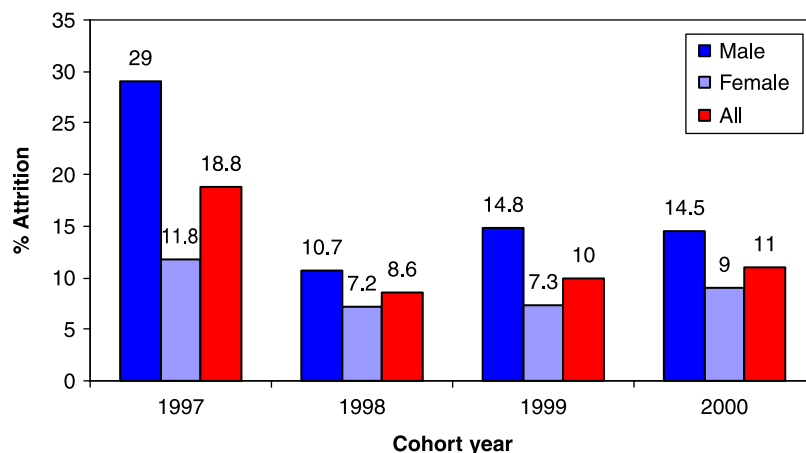
Figure 6.   Attrition by gender.

Comparison between number of 1st year entrants and pre-registration exam awards

This graph (Figure 7) compares the number of 1st year entrants in a given cohort year with the number of pre-registration passes five years later. Belfast pharmacy students have been excluded from these calculations as the majority go on to take the Pharmaceutical Service of Northern Ireland pre-registration exam. Projected figures have been used for the 2001–2004 cohorts (see Method section for details; Attrition ranges between 8.3% for the 1997 cohort and 11.1% for the 1999 cohort. The mean attrition rate between 1997 and 2000 was 9.5%. It is important to remember that these rates may underestimate attrition, as some of the candidates sitting the pre-registration exam may be overseas pharmacists sitting the exam in order to work in the UK. In addition, it is not possible to determine what proportion of candidates is re-taking the exam after a previous failure.

Placing pharmacy attrition into context

HESA provides UK-wide, country-level and institution-level figures for students who were no longer in higher education one year after starting their course and also makes projections on the number who will emerge without a degree at the end of the course. In terms of projected attrition at the end of the degree course, the figure for 2003/2004 for the UK was 14.9%. The figures for England, Scotland, Wales and Northern Ireland were 14.4, 17.5, 15.4 and 17.1%, respectively. The most up to date information on attrition rates in pharmacy for students who

	1997	1998	1999	2000	2001	2002	2003	2004
1st year students	1672	1716	1751	1829	1936	1985	2110	2333
pre-reg passes	1533	1551	1557	1662	1752	1796	1910	2111

Figure 7.   Comparison of first-year entrants and pre-registration exam success (1997–2004 cohorts).

completed their studies in 2004 (as shown in Figure 3) indicates that attrition then stood at 13.9%, which, although rising, is less than the overall figures for all higher education courses.

Discussion

Although there appears to be no trend in the data on applicants to pharmacy, the number of entrants to pharmacy is increasing, and seems set to continue to rise in the next few years as more new schools of pharmacy open. One consequence of the decreasing number of applicants vs. the growing number of places and students, in the long term at least, is that institutions may have to lowe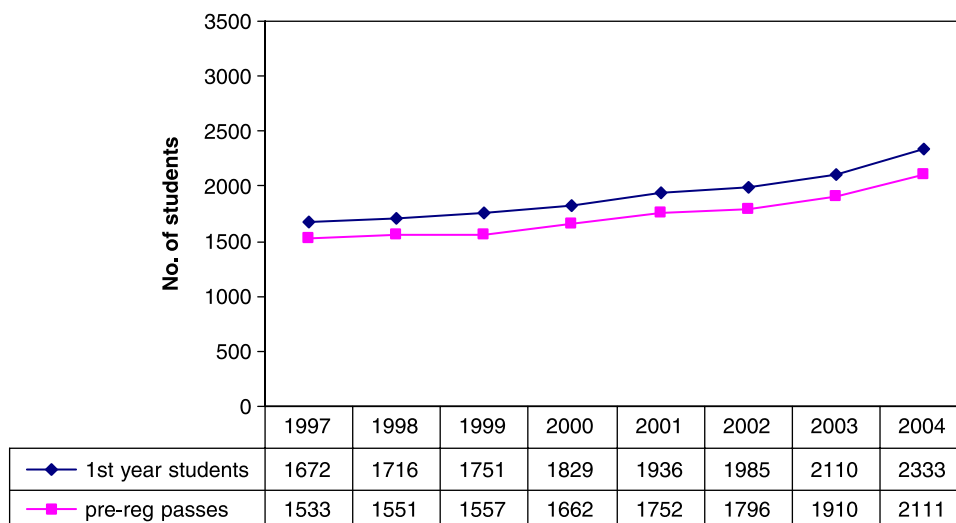r entry standards to fill places on their courses. As Taylor & Bates (2003) argue: "If students are sought from a stationary or shrinking pool there are inevitably implications for the quality of the applicants, with students having poorer academic ability than was previously the case being recruited to fill available university places". Given that attrition can be caused by students' inability to deal with the demands of the course programme (Select Committee on Education and Employment, 2001), it is possible that attrition may rise if less able students are recruited.

Attrition from 1st year entry to graduation appears to have peaked in 2001, the first year that pharmacists who began the new four-year MPharm graduated. Attrition is particularly high among overseas students suggesting that retention measures could effectively be targeted at this group. Previous studies have shown that attrition is higher amongst overseas than home students for all course studied at traditional universities (defined as pre 1992 universities), other things such as A-level score, family background, subject studied etc being equal (Johnes & McNabb, 2004). In the case of overseas students, factors such as language issues, financial difficulties or personal or family commitments may be contributing to problems that cause them to drop out, rather than factors specific to the course or the ability of the student. Critics argue that the social and cultural bias of the UK educational system undervalues the knowledge and practices of some groups of students, including those from overseas and from certain socio-economic backgrounds, and that it is this which makes these students more inclined to withdraw early—or drop out from their course (Thomas, 2002).

The results also indicate a gender split in attrition, with females consistently more likely than male students to graduate successfully. Researchers have suggested that students in courses with a high proportion of women make more progress than students in courses with a high male-to-female ratio (Beekhoven, De Jong, & Van Hout, 2003). Other studies (Johnes, & McNabb, 2004) have demonstrated that the gender mix of students affects performance, with attrition higher for male students on courses where female students are in the majority. Completion rates amongst female students, conversely, are higher if they study courses where the gender mix involves an over-representation of female students. Given the growing feminisation of the pharmacy student population, one would expect attrition overall, to be falling. However, this does not seem to be the case, unless, of course, attrition is rising amongst the male pharmacy students at a greater rate than it is for the female students. This issue merits further research.

In terms of pre-registration exam success, it would appear that the majority of students pass the exam as expected and will therefore enter onto the RPSGB register. However, the fact that a small proportion of students fail to make it onto to the Register each year is an important finding.

It is important to place pharmacy attrition into context. When comparing attrition with figures for HE in general, pharmacy compares relatively favourably. It is also important to take into account the limitations of the data sets used to describe pharmacy attrition. Nonetheless, this paper suggests that attrition is a real issue in GB pharmacy education. Despite a growing number of students entering pharmacy degrees it cannot be assumed that all students who start the course will continue through to pre-registration exam and ultimately to registration on the RPSGB pharmaceutical register. It is important for workforce planners to be aware of anticipated attrition rates, as this may influence the number of pharmacy degree places made available. It will also be essential to follow attrition carefully in the next few years to see how significant changes in pharmacy education, in particular the proliferation of new schools of pharmacy, impact on attrition levels. This paper presented overall attrition for all schools of pharmacy together, and anonymised data on each school separately. While these data provide a general indication of how pharmacy students fare over the duration of their training, analysis at an institution level would shed light on variation across locations. This is likely to be particularly important as the new schools come on-stream.

Attrition is a multi-faceted issue and there are likely to be many factors, both extrinsic and intrinsic to the individual student, which determine which students are likely to drop out. Qualitative research to explore these issues with pharmacy students would provide valuable information that might help institutions identify individuals who are likely to drop out and to target them with retention measures.

Conclusion

An understanding of attrition rates is important because it allows workforce planners and policy

makers to estimate the number of new pharmacists that can be expected to join the register each year. However, this can only be achieved with accuracy if data are clearly defined. One of the key difficulties in exploring attrition in pharmacy lies in the quality of the data that can be used. Changes to the way in which UCAS processes data on applications to undergraduate courses means that it is no longer possible to determine how many individuals are applying to study pharmacy. Although the RPSGB now produces annual data providing comprehensive information on the number of students entering pharmacy and the number of degrees awarded, a number of difficulties remain. It would be useful, for example, if the RPSGB could record the number of sandwich course students who are in their fifth year of study, rather than including these individuals within the fourth year numbers. In terms of the pre-registration examination, it would be useful to know what proportion of entrants and successful candidates are home/EU students and what proportion are taking the exam for the first time. At present it is difficult to track a cohort from 1st year to pre-registration success with absolute certainty. If data were collected longitudinally, it would be possible to explore the ways that drop out behaviours vary over time, and may differ for different types of students. A greater understanding of the causes of attrition might also make it possible to design institutional strategies to address these different behaviours in appropriate ways, so that accurate projections of the numbers of graduating students can be made.

Acknowledgements

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Career intentions of pharmacy students

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Objectives: In light of pharmacy workforce shortages in Great Britain, the profession's regulatory body commissioned a programme of longitudinal work to explore pharmacy career decision-making in relation to influences on career choice and intended career paths. Our objective was to gather data on career intentions that could be used to produce robust predictions about pharmacist supply.

Methods: Two annual surveys conducted with the same cohort of pharmacy students in 2005 and 2006. The questionnaires sought to clarify influences on respondents' career intentions and their early career plans.

Results: Only two-thirds of respondents intended going straight into British pharmacy practice after training, with fewer white men (57%) than ethnic minority men (71%) intending to go straight into practice. Preferences for early careers reflected existing occupational segregation, with 41% of white females hoping to work in hospital pharmacy and a similar proportion of ethnic minority men (40%) hoping to work for a large multiple community pharmacy after training.

Conclusions: A sizeable proportion of pharmacy students do not intend entering the profession for which they have trained, a proportion which is much larger than estimated by other studies. This has significant implications for workforce planning. Existing gender and ethnic segregation in the profession may have occurred as a result of personal choice rather than being a function of constraints operating within the pharmacy labour market.

Introduction

To address current pharmacy workforce shortages in Great Britain undergraduate student numbers have increased 60.7% between 1994 and 2004.[1,2] Accommodating this expansion in student numbers, the number of pharmacy education providers has also risen. Yet despite this expansion in undergraduate pharmacy education, shortages of both community and hospital pharmacists persist.[3,4] The reasons for these shortages include the increased demand for pharmacy services associated with the growth in prescription medication use, demand for more services related to ageing populations, and structural demands on pharmacists resulting from an expansion in pharmacy practice. This expansion in pharmacy practice, driven in part by the commissioning role of primary care trusts introduced by the new community pharmacy contractual framework,[5] has extended the scope of community pharmacists' roles to include enhanced and advanced services such as medicines use reviews.[6,7] However,

delivering these advanced and enhanced services is problematic in the context of ever increasing dispensing workloads and workforce shortages.[8]

Of course, some of these workforce shortages are not exclusive to pharmacy and can be seen as part of more general labour market trends, such as the growth in flexible working. However, other supply shortages are more pharmacy-specific, with the progressive entry of women to the profession[8–12] being viewed as particularly problematic, given that there is evidence that female pharmacists are more likely to work part-time than male pharmacists,[8–10,12–14] and that part-time working among female pharmacists begins relatively soon after qualification.[8,12]

Supply is also affected by such variables as the number of pharmacy graduates choosing to enter practice,[1] immigration, emigration,[15] retirement, patterns and hours of work, career breaks and occupational segregation. Some of these, such as the numbers reaching retirement age, can be estimated reasonably accurately and used to predict workforce supply. Estimating the proportion likely to leave or (re)enter the workforce for other reasons, or make other changes in their patterns of work, is, however, more complex and requires an understanding of the ways that employment behaviours are influenced by intentions, and how these intentions are themselves influenced by attitudes to work and careers.[16,17]

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Starting with undergraduates studying in pharmacy schools in Great Britain, our study aims to improve the profession's understanding of its future workforce, especially their work/career intentions. Our interests lie in contextualizing how career intentions are informed and shaped, whether occupational inheritance[18] or family members are influential, and whether early career intentions can predict aspects of later careers such as which sector of practice students enter. We also hypothesize that career intentions will vary according to students' gender and ethnicity, since there is evidence of gender and ethnic 'niches' within pharmacy practice in Great Britain,[6,9,19] with women more likely to work in the hospital sector[9] and those from black and ethnic minority groups more likely to work in the community sector.[19–21] Certainly, recent research suggests that pharmacy students' early career preferences already reflect these niches in pharmacy practice.[22]

The rationale for focusing in this paper on career intentions is based on previous research which has shown that stated intentions are a good predictor of outcomes.[16,17] Although the majority of work on intentions has been based on intentions to leave a particular post or profession,[23–25] in this paper we use intentions to explore pharmacy students' career preferences and how they change between entry to university and third year of the four-year MPharm degree course, and between the third and final year. From these measures of career intentions we then make predictions about future pharmacy workforce supply.

Methods

Study design

The mainstay of our research is a series of annual, self-administered questionnaires, using primarily closed questions, designed to capture demographic and career-related information. Each questionnaire is structured around a particular stage in the cohorts' pharmacy career. Data are linked from year to year using a numerical identifier, which allows for the career paths of respondents to be tracked over time. All the questionnaires are pretested and piloted with a sample of pharmacy graduates from 2004 to improve the internal validity of the questionnaires. We also conduct focus groups with a subsample of the 2004 cohort to examine questions in greater depth and to provide an additional measure of reliability and validity.

The first questionnaire for the study focused on the cohorts' 'Early Choices', and collected data on awareness of pharmacy as a profession prior to entering university and on future career intentions. At the time of completing this questionnaire, in the spring of 2005, the cohort were third-year students, and we hypothesized that as students have to choose where to do their preregistration training around this time, decisions about future careers would also be taking place.[26] Early Choices data analysed for this paper relate to: experience of pharmacy before starting university (with six possible responses, including none, work experience and a relative who is a pharmacist, which respondents were asked to select all that applied); and intended career choice before starting university, which had nine response categories, including each of the main sectors of the profession (hospital, community, primary care, industry, academia) as well as options such as no clear idea, and work outside pharmacy.

The second questionnaire, administered in March 2006 when the cohort was close to completing their undergraduate education, focused on 'Preregistration Choices', and had an emphasis on career issues relating to preregistration training. Results from the Preregistration Choices questionnaire presented in this paper are derived from a question on plans for post-registration training, a categorical variable with eight response categories, and a question on future career intentions (defined as preferences for 10 years' time), where there were 14 possible career choices which respondents were asked to rate in terms of how certain they felt about a choice, on a four-point scale ranging from 'very certain' to 'very uncertain'. There was also a category of 'not relevant' which respondents were asked to select if they were definitely not considering one of the listed career choices. Choices included in the list ranged from the main sectors of the profession to choices to practice abroad or outside pharmacy.

Since at each round of data collection some core questions relating to the cohort's (early) career plans were included, analysis in this paper concludes with exploration of the stability of intended career plans. This analysis involves comparing between responses to the question on career choices for 10 years' time that appeared in both questionnaires, a methodological approach used elsewhere to explore the dynamic nature of career development.[27]

Selection and recruitment of participants

Previous longitudinal studies have shown that in order to recruit sufficient numbers it is crucial to visit people and discuss the research with them personally.[28] Therefore, to recruit our cohort a member of the research team liaised with faculty staff in British schools of pharmacy and arranged to meet all pharmacy students expected to graduate in 2006. However, before these meetings could take place, ethical approval was sought, in the first instance from the university ethics committee where the research team are based, after which participating schools were asked to clarify whether their own institutional approval was also necessary in order for participants to be recruited to the study. Five schools required additional institutional approval and in all cases this was granted.

Once ethical approval was obtained for the study, the team met the students based at all 15 British schools of pharmacy that had students due to graduate in 2006, told them about the study and invited them to participate. At this stage, focusing on the pharmacy careers

of 2006 pharmacy graduates from the European Economic Area (EEA) gave us a population size of 1884.

Data collection

To maximize response rates, the team administered both questionnaires directly to the students during subsequent visits to the schools of pharmacy. Questionnaires were completed at the end of a time-tabled lecture. However, students attending one school of pharmacy were not based in their school during the data collection period, and in this case questionnaires were mailed to the school for them to send out on our behalf. Unfortunately, this resulted in a low response rate from this school, and ultimately to the exclusion of students from this school from our study.

To boost the overall response rate, faculty in the remaining schools were asked to remind students not present when the team visited and distribute the questionnaires on our behalf. Mailed reminders were sent to non-respondents.

Data from both questionnaires were coded and entered into SPSS PC, and subsequently checked and cleaned. However, when it came to linking records between the two data collection points we encountered several methodological difficulties. For example, we found that at some schools of pharmacy there had been an influx of students re-taking their final year who had not been in their third year in 2005 and who had not, therefore, completed an Early Choices questionnaire during the first round of data collection for the study. We also found that some schools lost, rather than gained, students, typically because students had failed their examinations at the end of their third year and so they had not been allowed to progress to the final year of the course. As a result, the number of students eligible to take part in the study fell to 1697.

Data analysis

We used data from the Early Choices questionnaire to explore early awareness of pharmacy careers and data from the Preregistration Choices questionnaire to describe the cohort's intentions for after registration. By linking the two data-sets, the extent to which their career intentions have changed/remained constant are then explored. However, data analysis primarily focuses on the questionnaires as cross-sectional surveys.

Since the data consists primarily of categorical variables, analysis in this paper uses χ^2-tests to explore the relationships between variables, with significance levels set at 0.05.

Results

Cohort characteristics

With completed Early Choices questionnaires from 1159 students, the response rate to our first survey was 67%. Of these, 829 (71.5%) were women. Respondents were ethnically diverse: 588 described themselves as white (52.8%); 359 Asian (32.2%); 71 black (6.4%); and 46 Chinese (4.1%). Men were significantly more likely than women to be from an ethnic minority group (54.1% versus 44.5%; p = 0.004).

The response rate to the second, Preregistration Choices, questionnaire was 68% (1154/1697). Respondents had similar characteristics to those completing the Early Choices survey: 827 (71.7%) were women; 611 (53.4%) were white; 372 (32.5%) Asian; 75 (6.6%) black; and 48 (4.2%) Chinese. Once again, significantly fewer women were from ethnic minority groups than men (44.1% versus 54%; p = 0.004).

While these response rates are typical of this kind of research,[29] respondents may not be representative of the cohort overall. Since the professional body, the Royal Pharmaceutical Society of Great Britain, only holds demographic data on registered pharmacists, and the schools of pharmacy were prevented by data protection regulations from providing us with demographic information, it was impossible to ascertain how representative the respondents were – although the profile closely matches that reported by another recent study of British pharmacy students.[22] This notwithstanding, the proportions of women and students from ethnic minority groups is higher than on the current British Register of Pharmacists.[30]

Sources of early career awareness

Although 40% of the cohort had no experience of pharmacy before starting university, many had had vacation experience in a community pharmacy (28.8%), a Saturday job in a pharmacy (19.5%), and/or a relative who was a pharmacist (14.1%), among other things. There were differences between male and female, and between white and ethnic minority, students (Table 1). Some groups of respondents were more likely to have had a Saturday job in a pharmacy (white women) while other subgroups were more likely to have had a relative who was a pharmacist (ethnic minority women).

Some instances of early career awareness were clearly inter-related with others. While 20.7% of those who had had vacation experience in a community pharmacy also

Table 1 Proportion of Early Choices respondents having any of the main sources of early pharmacy career awareness, by gender and collapsed ethnic group (%)

	Vacation experience in community pharmacy	Saturday job in a pharmacy	Relative who is a pharmacist
Men	23.6	13.0	15.8
White	24.3	18.8*	16.0
Ethnic minority	22.4	8.8*	15.9
Women	30.9	22.0	13.4
White	30.5	27.1**	10.6*
Ethnic minority	31.0	14.1**	17.2*
All	28.8	19.2	14.1

*P < 0.050; **P < 0.001

had a relative who was a pharmacist, only 11.4% of those who had not had vacation experience in a community pharmacy also had a relative who was a pharmacist. Although small in overall terms it nevertheless appears that some cohort members had both formal and informal experiences of the pharmacy profession, suggesting that among this group of respondents early socialization to the profession occurred through multiple sources, such as family-based work experience and occupational inheritance.

Career intentions on entry to school of pharmacy

When the cohort was asked to describe their career intentions at the start of their pharmacy degree, half identified community practice as their preferred choice (Table 2), although around 10% said that they had had no clear idea about their intended career path at this time.

Those lacking a clear career intention on entry to university were less likely to have had vacation experience or a Saturday job in a pharmacy (Table 3), demonstrating, perhaps, the effect of early awareness of pharmacy as a profession on future career intentions.

Some variation in career intentions occurred between subgroups in the sample, with a significantly larger proportion of ethnic minority men intending to work in community and other sectors of practice, and white men more likely to be uncertain about their future careers. Data also indicate that on entry to pharmacy school, students' career intentions generally matched existing gender and ethnic niches in the profession,[8,9,19–21] with white women more likely to intend to work in the predominantly female sector[9] (hospital pharmacy), and men from black and other ethnic minority groups more likely to have identified community pharmacy as their future career choice. These results are similar to those published elsewhere,[22] although the proportion having no clear idea about their future career at the start of their course is lower than previously reported.

Career intentions on completion of preregistration training

Given that more than 90% of pharmacy graduates pass the registration exam and hence are eligible to practice

Table 3 Proportion of Early Choices respondents intending to work in any one of the main sectors of the profession at the start of their degree, by having any of the main sources of early pharmacy career awareness (%)

	Hospital	Community	Other	Don't know
Vacation experience in community pharmacy*	15.6	58.3	17.5	8.6
Saturday job in a pharmacy*	17.0	59.8	16.5	6.7
Relative who is a pharmacist	14.0	52.2	22.9	10.8
All	18.3	50.0	21.8	9.9

*P < 0.050

pharmacy in Great Britain,[31] we were interested in quantifying intentions to work as a pharmacist at this stage in the cohorts' careers. We found that only 67.4% planned to go straight into pharmacy practice in Great Britain after completing their preregistration training, and significantly fewer white men (57.4%) than ethnic minority men (70.7%) (p = 0.016) intended to enter pharmacy practice at this stage in their career. However, about half (54.7%) of those who reported that they did not intend to go straight into pharmacy practice said that they hadn't yet decided what to do. This group represented 17.8% of respondents overall.

When preferences for early pharmacy practice were explored, significant differences between groups once more emerged (Table 4) with preferences largely reflecting existing occupational segregation in pharmacy practice: thus 41.4% of white women hoped to work in hospital pharmacy while a similar proportion of ethnic minority men (40.4%) hoped to work for a large multiple community pharmacy. This indicates that occupational segregation is not just a matter of gender or ethnicity, but a combination of these characteristics, since, for example, white women and ethnic minority men intended to work in sectors where the concentration of pharmacists with these same characteristics were already employed. This combination of characteristics has not been well documented in other studies of pharmacy students' career intentions.[22]

Exploring the relationship between sector of training post and preferences for working in a sector after registering, we found that three-quarters of those who had a training post in hospital pharmacy intended to work in the same sector; and 79.3% of those who had secured a training post in community pharmacy also hoped to work in this sector (p < 0.001).

Future intentions

In addition to exploring future career intentions, both surveys also asked respondents to rate their certainty about their career choices. These data are central to our research design and will be used to determine the extent to which intentions are matched by behaviours as the cohort develop their pharmacy careers.

Table 2 Proportion of Early Choices respondents intending to work in any one of the main sectors, by gender and collapsed ethnic group (%)

	Hospital	Community	Other	Don't know
Men	14.0	50.2	25.2	10.6
White *	12.9	48.6	22.1	16.4
Ethnic minority*	15.1	51.8	27.1	6.0
Women	20.0	49.9	20.5	9.6
White	21.5	51.3	17.6	9.6
Ethnic minority	18.3	47.9	24.4	9.5
All	18.3	50.0	21.8	9.9

*P < 0.050

Table 4 Proportion of Preregistration Choices respondents intending to work in any one of the two main sectors, by gender and collapsed ethnic group (%)

	Hospital	Community – large multiple	Community – independent	Community – medium multiple	Community – small chain
*Men**	24.0	33.4	10.7	5.7	4.7
White	29.2	25.7	10.4	8.3	6.9
Ethnic minority	19.3	40.4	10.5	3.5	2.9
*Women**	39.2	30.4	5.4	7.3	3.4
White	41.4	28.4	7.0	7.3	4.3
Ethnic minority	36.3	32.9	3.4	6.6	2.3
All	35.0	31.2	6.9	6.8	3.8

*$P < 0.050$

Although respondents could be certain about having a career in more than one sector in 10 years' time, future career intentions varied significantly according to respondents' gender and ethnicity: as reported above, women were significantly more likely to be certain that they wanted a career in hospital pharmacy in 10 years' time, while ethnic minority men respondents were more likely to be certain that they wanted a career in community pharmacy working for a large multiple (Table 5). If these career intentions are realized then current occupational segregation is likely to continue.[3,8,9,19–21]

Since relatively large numbers of British-trained pharmacists choose to work abroad,[8,15] respondents could also select that they were certain that they intended to practice pharmacy abroad when answering this question. Around one-third of the cohort (32.4%) said they were certain they would do so, and this was consistent across all subgroups of respondents.

Stability of future intention

Linking between reports of future intentions records at both data collection points, we found that intentions remained relatively stable. We found that 75.2% of those who were certain that they would practice pharmacy abroad in 10 years' time when they completed the Preregistration Choices questionnaire had also been certain of this when they completed the Early Choices questionnaire; that 79.4% of those who were certain that they wanted a career in hospital pharmacy in 10 years' time when they completed the Preregistration Choices questionnaire had also been certain of this when they completed the Early Choices questionnaire; and that 76.8% of those who were certain that they would like to work for a large community pharmacy multiple in 10 years' time when they completed the Preregistration Choices questionnaire had also been certain of this when they completed the Early Choices questionnaire. All of these findings were statistically significant ($p < 0.001$).

Discussion

That career intentions are informed and shaped before students begin a pharmacy degree through sources including work experience and having a pharmacist in the family suggests that choosing a career in pharmacy is a socially located process rather than an event that takes place at one particular instance. The influence of this occupational awareness on students' career intentions at the outset of their undergraduate education was small but significant, and may prove to have a bearing on the degree of success achieved in becoming established and successful in their subsequent careers.

At the outset of their education, many students' career preferences demonstrated a limited awareness of the opportunities within pharmacy, since many students had no clear intention about their future. With many of these students being white and male, and with significantly fewer white men intending to enter pharmacy practice in Great Britain after their preregistration training, it appears that this group's career intentions are the least well defined. In the context of the rise in the number of pharmacists who work as locums,[32] it is possible that those white men who do not have well-formed

Table 5 Proportion of Preregistration Choices respondents certain they will work in any one of the two main sectors in 10 years' time, by gender and collapsed ethnic group (%)

	Hospital	Community – large multiple	Community – medium multiple	Community – small chain
Men	37.6*	39.7	25.1*	23.2
White	37.0	28.3**	17.8*	23.0
Ethnic minority	38.6	50.0**	31.5*	23.8
Women	50.4*	39.7**	27.8*	21.5
White	49.4	33.3**	24.7	22.7
Ethnic minority	51.7	48.4	31.9	20.1
All	46.9	48.8	27.0	22.0

*$P < 0.050$; **$P < 0.001$

career plans may be more likely to develop portfolio or boundaryless[33]careers, involving a range of sequences of occupational experiences rather than careers which follow more traditional trajectories. There is also evidence from other studies[8] that younger male pharmacists are those most likely to consider working abroad and the least likely to rule it out altogether, once again perhaps demonstrating that this group may be open to various career opportunities and mobility.

With career intentions varying according to characteristics such as gender and ethnicity but reflecting existing occupational segregation, the explanation of these findings may lie in the interaction between these characteristics and perceived opportunity structures. The degree to which these characteristics influence career progression later on can be examined and described through future data collection. Evidence of constraints being placed on careers have been shown in the past to have contributed to, for example, structural differences in pharmacy careers, with ethnic minorities being under-represented in managerial positions in community pharmacy.[19] If occupational segregation impacts on the cohort's ability to realize their early career intentions then it is possible that this will have a negative impact on their commitment to the profession and may result in them leaving the profession. Certainly, other studies of graduates' work experiences[34,35] in the early stages of their careers have found that unmet career expectations – such as disappointment with career development and advancement – have a negative impact on employee commitment and retention.

It is after the cohort has begun to develop their careers that we will be able to compare their intentions to actual patterns in pharmacy practice, and to ascertain the extent to which intentions can actually predict workforce behaviours. Since we know from other research[16] that experiences at work also contribute to workforce behaviours, we will be able to determine the extent to which career intentions are mediated by other variables.

More generally, our findings may have important implications for the profession itself and pharmacy's workforce planners if students' intentions are actualized. Until now there have been few data quantifying the proportion of graduates that will enter the pharmacy profession. Making forecasts on the basis of the numbers of students entering undergraduate pharmacy education has been difficult.[1] The results of our study cannot fill this knowledge gap but merely quantify the proportion who intend to enter the profession for which they have trained. That we have only explored intentions at this stage is a recognized limitation of our findings. More research into the reasons for not entering professional practice is required. Such research should explore when this decision occurs, and identify possible actions to prevent future pharmacy graduates leaving the profession.

The findings presented here have other limitations. The exclusion of students from one school of pharmacy may have biased our findings so that they are not representative of all pharmacy students graduating from British schools in 2006. The response rate for the questionnaire was adequate, and given that others[29] have argued that studies achieving a response rate of between 60% and 70% are unlikely to have been biased by differences between respondents and non-respondents, we feel we have collected valuable data on students' career intentions. Furthermore, the response rates and respondent profiles achieved in relation to the two questionnaires used were similar. But it is possible that our results are biased, especially given that over 70% of those taking part were women. Another recent study of British pharmacy students[22] did, however, find similar proportions of female and minority ethnic students. Many of their results regarding students' career preferences were also replicated in our work, suggesting that both sets of findings have some validity. Where our study differs is in its longitudinal design, which is crucial if we are to improve the profession's understanding of its future workforce, and especially the relationship between career intentions and behaviours.

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Paper 4: Willis SC, Hassell K, Seston EM, Hann M. Using learning outcomes for undergraduate pharmacy education to assess final year students' perceptions of their preparedness for pharmacy practice. International Journal of Pharmacy Practice 2009;17(6):351-358

Using learning outcomes for undergraduate pharmacy education to assess final-year students' perceptions of their preparedness for pharmacy practice

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Abstract

Objective Using learning outcomes for undergraduate pharmacy education in Great Britain, this study explored the extent to which final-year students perceived their education had prepared them for various aspects of practice. Fifteen learning outcomes were evaluated, encompassing competencies necessary for both the performance of pharmacists' tasks and for a professional approach to those tasks.
Methods Final-year students studying at 14 British pharmacy schools completed a questionnaire evaluating perceptions of the extent to which their course had met learning outcomes defined by the profession's regulatory body 'for and of pharmacy graduates'. Learning outcomes were divided into two groups: those related to preparedness for competence in the performance of pharmacist-role tasks (Group 1 learning outcomes) and those related to how tasks are approached (Group 2 learning outcomes). Univariate analysis explored associations between contextual/demographic variables and learning outcomes; multivariate analysis was used to determine whether the pharmacy school attended independently predicted learning outcomes once ethnicity and gender had been controlled for.
Key findings A response rate of 67.8% was achieved. Respondents were more likely to have felt prepared for broad areas than for specific competencies (Group 1 learning outcomes). Marginally fewer felt prepared for a professional approach to tasks (Group 2 learning outcomes). Females and respondents from minority ethnic groups were significantly more likely to have felt prepared for many outcomes; significant variation between pharmacy school attended and outcomes were also found. After controlling for student characteristics, multivariate analysis demonstrated that the pharmacy school attended predicted variation in 11 out of 15 learning outcomes.
Conclusions In the main, students perceived that the learning outcomes of curricula had been met. However, differences between school attended and students' perceptions suggest that either some schools are providing insufficient opportunities for their students to develop skills or that students at some schools have unrealistic expectations of the skills they will need.
Keywords curriculum evaluation; education; learning outcomes; MPharm; undergraduate

Introduction

The last decade has seen rapid developments in the roles of pharmacies and pharmacists.[1,2] Driven by a range of factors including increased customer demand associated with the growth in prescription medication use, new ways of organising community pharmacy services, technological innovation, increased specialised theoretical and practical knowledge, and government policies, the work of pharmacies and pharmacists has been profoundly transformed.[3–5] Given these changes, in the study reported here we aimed to explore the extent to which pharmacy education in Great Britain has responded to the developing roles of pharmacists, by investigating whether British pharmacy students feel equipped with the competencies necessary for pharmacy practice.[2]

Structured around the conceptualisation of a pharmacist as a medicines expert,[6] undergraduate pharmacy curricula in Great Britain are designed to produce graduates who

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have a 'co-ordinated understanding and comprehensive knowledge and expertise in key aspects of the preparation, distribution, actions and uses of drugs and medicines'.[6] Delivered via a 4-year full-time or intercalated 5-year sandwich programme, the focus of the Master of Pharmacy (MPharm) is on gaining understanding, knowledge and expertise in drugs and medicines,[7] with learning contextualised to allow students to appreciate the contributions of pharmacists and pharmacies to patient care.[6,8]

With pharmacy education reflecting the paradigm shift towards pharmaceutical care as the accepted practice of the profession, pharmacy schools in many countries now aim to produce students skilled in pharmaceutical care so that they can apply its concepts and principles on graduation.[9,10] There is, however, evidence that preparing students to practice pharmaceutical care once they leave pharmacy school appears to be more of an aspiration for, than an achievable outcome of, many curricula.[2,9–14]

However, in the context of renewed interest in restructuring undergraduate pharmacy education in Great Britain, this paper explores the strengths and limitations of British pharmacy curricula outcomes. Such an exploration adds to a limited outcomes literature and provides a measure of graduates' perceived preparedness for practice in Great Britain against which graduates of other curricula can be compared. In the research reported here we gathered outcomes data about the knowledge, skills and attitudes expected 'for and of pharmacy graduates to ensure they are properly prepared' to provide pharmaceutical care as defined by the profession's regulatory body, the Royal Pharmaceutical Society of Great Britain (RPSGB).[6] Although complying with the RPSGB's learning outcomes is an obligatory requirement for accreditation of British pharmacy school curricula, there is evidence that learning outcomes are not widely used by programme leaders to shape curriculum design or reform.[15] Furthermore, there is also evidence that because academic staff in British pharmacy schools experience difficulties in defining competencies required for professional practice, assessments tend not to evaluate skills associated with clinical and professional competence.[15]

In our research, learning outcomes were assessed via student evaluations of their preparedness for specific areas of competence, such as knowledge of over-the-counter (OTC) medicines, personal transferrable skills associated with 'graduateness'[6] such as communication skills, and generic academic skills such as research skills, as well as areas of professional competence such as having the ability to reflect on practice and the ability to formulate, analyse and solve problems.

Whereas both a small-[16] and larger-scale[17] study using similar measures have been undertaken previously in a UK context, our study provides a more detailed exploration that considers both the relationship between demographic and contextual variables and students' evaluations of their preparedness (an analysis that was not presented in the previous studies) and is grounded in a model of how learning outcomes are related to one another in clinical practice.[18] In our analysis outcomes are grouped into two different areas, namely outcomes relating to performance (these outcomes relate to preparedness for competence in the performance of
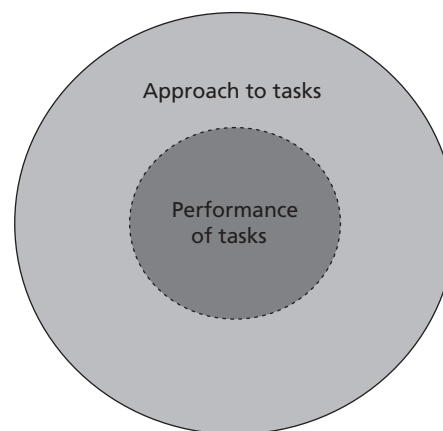
Figure 1   A two-circle model of the relationship between two groups of pharmacy education learning outcomes. Adapted from Harden et al.[18]

pharmacist-role tasks) and outcomes relating to how these tasks are approached (these outcomes relate to having a professional attitude or approach to the performance of tasks) (see Figure 1[18]). We conceptualise the two groups as closely related, since competencies necessary for the performance of a task are also likely to be influenced by competencies necessary for a professional attitude or approach to that task. The close relationship between the two groups also reflects a philosophical integration between the knowledge, skills and attitudes necessary for pharmaceutical patient care. A summary of outcomes in each of the two areas is given in Table 1.

Results presented here are from a longitudinal programme of work designed to improve the profession's understanding of its workforce, their attitudes and behaviours and the ways that these are shaped by contextual variables such as teaching and learning experiences.[19] Research began in 2005, tracking a student cohort due to graduate in 2006. At the outset of our longitudinal work all 15 British schools participated that had students graduating in 2006, but after the first round of data collection in 2005 one school with a very low response rate (21%) was excluded.

This paper explores the cohorts' perceptions of their preparedness for practice based on data collected in spring of the academic year 2005/2006 when they were final-year students. At this point in the academic year, participants based in 13 of the 14 schools were approaching the end of their taught MPharm programme and final examinations; a minority of participants at the remaining school ($n = 27/77$), school D, were in the fourth year of a 5-year sandwich programme in which professional training is incorporated into the MPharm. All other MPharm graduates (including the other 64.9%, $n = 50$ participants at school D) were due to undertake their pre-registration training – 52 weeks of supervised and assessed training in employment in a clinical pharmacy environment – after graduating from pharmacy school. Although only small, numerically speaking, the subgroup of school D participants following the sandwich course ($n = 27$) had already spent 6 months in a training placement, and we were interested in whether this subgroup's perceptions of their preparedness for practice would differ

Table 1 Pharmacy education learning outcomes classified according to the two groups of learning outcomes represented in the two-circle model (see Figure 1)

Competencies necessary for the performance of tasks	Competencies necessary for a professional approach to tasks
Good clinical knowledge	Problem-solving
Good knowledge of dispensing	Reflective practice
Good knowledge of OTC medicines	Ability to recognise limitations
Research skills	Professional attitudes
Patient-centred care skills	Professional behaviours
Laboratory skills	
Practical skills	
Intellectual skills	
Team-working skills	
Communication skills	

OTC, over-the-counter.

from the perceptions of those participants who were following a traditional 4-year MPharm. Such results are especially timely given current debate about restructuring undergraduate British pharmacy education to integrate the degree course with pre-registration training.[20] In addition, in light of international drivers for implementing pharmaceutical care, the analysis presented here may help identify implications for the profession of current learning outcomes in Great Britain, and suggest ways to improve curricula so that future cohorts are better prepared for patient-centred pharmaceutical care.

Methods

Using RPSGB learning outcomes for undergraduate pharmacy education,[6] a questionnaire was developed for use with final-year MPharm students attending pharmacy schools in Great Britain during the 2005/2006 academic year. Question formats for the 15 learning outcomes evaluated in the survey were derived from previously published studies,[16,17] and piloted with a sample from an earlier MPharm cohort at a similar stage in their education and training to provide an additional measure of reliability and validity. The questionnaire also covered topics other than MPharm learning outcomes, but only these data are considered here.

Learning outcomes explored in the questionnaire reflect RPSGB expectations of what Great Britain pharmacy graduates should know and be able to do at the end of the MPharm. In relation to 10 learning outcomes respondents were asked to consider how much 'The course provided me with...' a particular pharmacy-specific knowledge or skill using statements reflecting competencies necessary for the performance of pharmacy practice tasks (see Table 1 for details). Five further learning outcomes were evaluated using statements asking respondents to consider how much 'the course helped' them develop a particular attitude or skill using statements reflecting competencies necessary for a professional approach to pharmacists' tasks. Responses were recorded on a five-point scale, with 'strongly agree' and 'strongly disagree' as the range; the midpoint was 'neither agree nor disagree'. Whereas outcomes statements have been used widely to evaluate health science education programmes and to explore students' experiences of those

programmes,[21] they have not been widely used to examine British pharmacy students' experiences of their curricula.

Students based at 12 of the participating pharmacy schools completed the questionnaire at the end of a lecture; the school administrator sent students at the other two pharmacy schools a postal questionnaire on our behalf. Non-responders at all 14 schools were sent a follow-up letter and a copy of the questionnaire.

Ethical approval for the study was sought from the university ethics committee where the research team are based; five schools required additional institutional approval as well. In all cases, ethical approval was granted.

Completed questionnaires were analysed in SPSS version 14.0 and STATA 9.2. Learning outcomes data were recoded to create binary dependent variables to guarantee sufficient cell sizes for subsequent analyses, with values of 1 and 2 on the agreement scale (equal to 'strongly agree' and 'agree') coded as 1 ('agree') and all other values coded as zero ('not agree'). Descriptive statistics were computed for variables, and cross-tabulations performed for learning outcomes by gender, ethnicity and pharmacy school. Fixed-effects logistic regression was then used to determine whether pharmacy school was an independent predictor of each of the 15 learning outcomes, controlling for student characteristics (gender and ethnicity). Females, students of white ethnicity and those attending school A were used as the reference category for the multivariate analysis. The significance level for all statistical tests was set at 5%. For this paper, results by pharmacy school have been anonymised, with individual schools identified by a different letter, sequentially, from A to N. Analysis focuses on the two groups of learning outcomes and considers the implications for pharmacy education where comparisons between subgroups and pharmacy school attended appear to have affected respondents' perceptions of their preparedness for practice.

Results

Respondent characteristics

In total, 1153 students completed the questionnaire (67.9% response rate). Considerably lower response rates were achieved where data were not collected from students after a lecture (schools D and E in Table 3 (see below), which had

response rates of 45.2 and 51.1% respectively). Almost three-quarters (71.8%, $n = 828$) of respondents were female and approximately half were from minority ethnic groups (46.7%, $n = 540$). Whereas most females in the sample were white (55.9%, $n = 462$), most males were from minority ethnic groups (54.2%, $n = 176$; $\chi^2 = 9.126$, df = 1, $P = 0.003$). Students' characteristics varied significantly according to gender ($\chi^2 = 32.806$, df = 13, $P = 0.002$) and ethnicity ($\chi^2 = 296.756$, df = 13, $P < 0.001$) when analysed by pharmacy school. Although our overall response rate is adequate we accept that respondents may not be wholly representative of the cohort; for example, it is likely that females are over-represented, since only 65.9% of new entrants to the Register of Pharmacists in August 2007 (when the majority of the cohort would have joined the register and hence been eligible to begin pharmacy practice in Great Britain) were female.[22]

Group 1 learning outcomes: preparedness for the performance of pharmacists' tasks

Most students agreed that their MPharm course had provided them with nine of the 10 learning outcomes classified as relating to preparedness for performance of pharmacist-role tasks in our model (see Table 2). In particular, students agreed that they were well prepared to communicate effectively (86.2%) and to work as a member of a team (83.9%), and that they had been provided with laboratory (83.3%), intellectual (79.6%) and patient-centred care skills (75.1%) in preparation for practice. Whereas respondents were likely to have agreed that the MPharm provided them with a good clinical (86.0%) and dispensing knowledge (80.6%) it is interesting to note that less than half (46.5%) believed their course had provided them with a good knowledge of OTC medicines, suggesting respondents were more likely to have rated the MPharm positively in terms of

preparation for broad areas of competence such as communication skills rather than for specific competencies such as knowledge of OTC medicines.

What is more, those agreeing that their course *had* provided them with a good knowledge of OTC medicines were also significantly more likely than the sample overall to have felt well prepared for other aspects of practice, including knowledge of dispensing (89.7 compared with 80.6%; $\chi^2 = 51.029$, df = 1, $P < 0.001$), clinical knowledge (91.0 compared with 86.0%; $\chi^2 = 19.945$, df = 1, $P < 0.001$) and practical skills (91.6 compared with 78.8%, $\chi^2 = 94.742$, df = 1, $P < 0.001$).

Gender
Female students were generally more likely than male students to have agreed that the MPharm provided them with many aspects related to preparedness to perform pharmacists' tasks (Table 2), although this only reached statistical significance in relation to team-working ($\chi^2 = 6.562$, df = 1, $P = 0.01$).

Ethnicity
Minority ethnic respondents were significantly more likely to have felt that their education had provided them with a good knowledge of dispensing ($\chi^2 = 16.257$, df = 1, $P < 0.001$) and OTC medicines ($\chi^2 = 26.088$, df = 1, $P < 0.001$), and to have agreed they had good team-working skills ($\chi^2 = 4.705$, df = 1, $P = 0.03$) than their white peers. On the other hand, significantly larger proportions of white respondents felt their course had provided them with sound intellectual skills compared with minority ethnic respondents ($\chi^2 = 6.458$, df = 1, $P = 0.011$).

Pharmacy school
Pharmacy school attended had a significant effect on students' perceptions of their preparedness (Table 3).

Table 2 Respondents agreeing they felt prepared to perform competencies derived from pharmacy learning outcomes, by gender and collapsed ethnicity

	Percentage of respondents (*n*)				
	Male ($n = 325$)	Female ($n = 828$)	White ($n = 611^a$)	Minority ethnic ($n = 540^a$)	Total
Competencies necessary for the performance of tasks					
Good clinical knowledge	86.8 (277)	85.7 (693)	85.9 (516)	86.1 (453)	86.0 (970)
Good knowledge of dispensing	82.1 (262)	80.0 (649)	76.1 (458)	85.8* (452)	80.6 (911)
Good knowledge of OTC medicines	48.7 (155)	45.6 (370)	39.4 (237)	54.8* (288)	46.5 (525)
Research skills	63.3 (202)	66.5 (539)	66.8 (402)	64.3 (338)	65.6 (741)
Patient-centred care skills	72.3 (230)	76.2 (616)	73.9 (444)	76.5 (401)	75.1 (846)
Laboratory skills	83.6 (266)	83.1 (674)	83.9 (505)	82.5 (434)	83.3 (940)
Practical skills	77.4 (246)	79.4 (644)	78.1 (470)	79.7 (419)	78.8 (890)
Intellectual skills	77.0 (244)	80.6 (654)	82.5 (496)	76.2*** (401)	79.6 (898)
Team-working skills	79.2 (252)	85.7** (695)	81.6 (491)	86.5*** (455)	83.9 (947)
Communication skills	83.3 (265)	87.3 (707)	85.2 (512)	87.3 (459)	86.2 (972)
Competencies necessary for a professional approach to tasks					
Problem-solving	71.5 (226)	77.4*** (626)	74.3 (445)	77.3 (406)	75.7 (852)
Reflective practice	65.4 (208)	68.1 (552)	62.3 (375)	73.0* (384)	67.3 (760)
Ability to recognise limitations	72.6 (231)	78.2 (633)	76.2 (457)	77.2 (406)	76.7 (864)
Professional attitudes	80.8 (257)	87.5** (709)	85.2 (511)	86.1 (454)	85.6 (966)
Professional behaviours	80.8 (256)	85.7*** (696)	84.1 (506)	84.6 (445)	84.3 (951)

OTC, over-the-counter. *$P < 0.001$; **$P \le 0.01$; ***$P \le 0.05$. ^{a}Some missing values.

Table 3 Respondents agreeing that they felt prepared to perform competencies derived from pharmacy learning outcomes, by anonymised pharmacy school (A–N)

	Percentage of respondents (*n*/total)													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Competencies necessary for the performance of tasks														
Good clinical knowledge*	97.8 (88/90)	86.6 (84/97)	90.5 (86/95)	79.7 (63/79)	74.2 (46/62)	95.7 (44/46)	72.6 (61/84)	87.1 (61/70)	96.0 (97/101)	85.7 (42/49)	87.4 (76/87)	82.4 (84/102)	78.8 (67/85)	87.7 (71/81)
Good knowledge of dispensing*	72.2 (65/90)	94.9 (93/98)	91.6 (87/95)	94.9 (75/79)	80.6 (50/62)	45.7 (21/46)	67.1 (57/85)	78.6 (55/70)	93.1 (94/101)	69.4 (34/49)	74.7 (65/87)	72.5 (74/102)	89.4 (76/85)	80.2 (65/81)
Good knowledge of OTC medicines*	53.3 (48/90)	38.1 (37/97)	23.3 (22/95)	77.2 (61/79)	29.0 (18/62)	71.7 (33/46)	32.9 (28/85)	44.3 (31/70)	42.6 (43/101)	34.7 (17/49)	39.1 (34/87)	32.4 (33/102)	72.9 (62/85)	71.6 (58/81)
Research skills	70.0 (63/90)	70.4 (69/98)	55.8 (53/95)	64.6 (51/79)	61.3 (38/62)	76.1 (35/46)	60.0 (51/85)	75.7 (53/70)	70.3 (71/101)	69.4 (34/49)	57.5 (50/87)	58.8 (60/102)	70.2 (59/84)	66.7 (54/81)
Patient-centred care skills**	89.9 (80/89)	76.3 (74/97)	75.8 (72/95)	82.1 (64/78)	71.0 (44/62)	80.4 (37/46)	76.5 (65/85)	74.3 (52/70)	74.3 (75/101)	83.3 (40/48)	64.4 (56/87)	67.6 (69/102)	77.6 (66/85)	64.2 (52/81)
Laboratory skills**	88.9 (80/90)	87.6 (85/97)	76.8 (73/95)	87.3 (69/79)	85.5 (53/62)	78.3 (36/46)	83.5 (71/85)	77.1 (54/70)	83.2 (84/101)	85.7 (42/49)	65.5 (57/87)	89.2 (91/102)	84.7 (72/85)	90.1 (73/81)
Practical skills	84.4 (76/90)	77.3 (75/97)	76.8 (73/95)	88.6 (70/79)	72.6 (45/62)	80.4 (37/46)	78.8 (67/85)	77.1 (54/70)	83.2 (84/101)	79.6 (39/49)	65.5 (57/87)	76.5 (78/102)	85.9 (73/85)	76.5 (62/81)
Intellectual skills	85.4 (76/89)	78.4 (76/97)	77.9 (74/95)	77.2 (61/79)	82.3 (51/62)	87.0 (40/46)	81.2 (69/85)	81.4 (57/70)	73.3 (74/101)	69.4 (34/49)	80.5 (70/87)	84.3 (86/102)	75.3 (64/85)	81.5 (66/81)
Team-working skills*	90.0 (81/90)	87.6 (85/97)	70.5 (67/95)	91.1 (72/79)	74.2 (46/62)	93.5 (43/46)	85.9 (73/85)	92.9 (65/70)	88.1 (89/101)	85.7 (42/49)	74.7 (65/87)	80.4 (82/102)	82.4 (70/85)	82.7 (67/81)
Communication skills**	88.8 (79/89)	85.6 (83/97)	80.0 (76/95)	92.4 (73/79)	83.9 (52/62)	97.8 (45/46)	88.2 (75/85)	91.4 (64/70)	87.1 (88/101)	89.8 (44/49)	79.3 (69/87)	75.5 (77/102)	83.5 (71/85)	93.8 (76/81)
Competencies necessary for a professional approach to tasks														
Problem-solving***	75.6 (68/90)	78.1 (75/96)	67.4 (64/95)	75.9 (60/79)	72.1 (44/61)	93.5 (43/46)	73.8 (62/84)	78.6 (55/70)	81.2 (82/101)	75.5 (37/49)	60.9 (53/87)	76.2 (77/101)	76.5 (65/85)	82.7 (67/81)
Reflective practice*	68.9 (62/90)	79.4 (77/97)	71.6 (68/95)	75.9 (60/79)	54.8 (34/62)	67.4 (31/46)	56.5 (48/85)	68.8 (48/70)	75.2 (76/101)	73.5 (36/49)	59.8 (52/87)	51.0 (52/102)	65.9 (56/85)	74.1 (60/81)
Recognise limitations	79.8 (71/89)	74.2 (72/97)	74.0 (71/96)	82.3 (65/79)	71.0 (44/62)	80.4 (37/46)	75.0 (63/84)	80.0 (56/70)	80.2 (81/101)	81.3 (39/48)	78.2 (68/87)	65.7 (67/102)	76.5 (65/85)	80.2 (60/81)
Professional attitudes	85.4 (76/89)	87.6 (85/97)	85.4 (82/96)	89.9 (71/79)	85.5 (53/62)	91.3 (42/46)	89.4 (76/85)	85.7 (60/70)	84.2 (85/101)	89.8 (44/49)	82.6 (71/86)	74.5 (76/102)	87.1 (74/85)	87.7 (71/81)
Professional behaviours***	81.1 (73/90)	86.5 (83/96)	88.5 (85/96)	88.6 (70/79)	79.0 (49/62)	93.5 (43/46)	85.9 (73/85)	85.7 (60/70)	86.1 (87/101)	87.8 (43/49)	81.6 (71/87)	70.6 (72/102)	84.7 (72/85)	87.7 (71/81)

OTC, over-the-counter. *P < 0.001; **P ≤ 0.01; ***P ≤ 0.05.

Looking across the 10 outcomes measured, Table 3 clearly demonstrates that some schools were more likely than others to vary from the norm, with students attending schools E, G, K and L far less likely to have agreed that they felt their course had prepared them for practice across three of the 10 items assessed. Moreover, differences between students attending school G and the rest of the cohort were most notable in relation to knowledge outcomes, whereas students attending school K were significantly less likely to have agreed they were prepared to perform pharmacist skills.

Comparing between students following the traditional and sandwich courses at school D (where we can assume that the pharmacy school environment was reasonably constant across both groups) we found no significant differences in relation to perceptions of preparedness, although those on the sandwich course were more likely to have felt prepared for OTC medicines.

Multivariate analysis
With the exception of perceptions of preparedness for either practical or intellectual skills, pharmacy school attended was found to predict variation in learning outcomes (see Table 4 for more details).

Group 2 learning outcomes: how tasks are approached
The majority felt well prepared to perform competencies necessary for a professional approach to pharmacists' tasks, with preparedness for professional attitudes and behaviours scoring particularly highly (85.6 and 84.3% respectively). Cohort members felt least prepared to reflect on their practice (67.3%) (see Table 2 for more details).

Gender
Significantly larger proportions of females than males felt prepared for problem-solving ($\chi^2 = 3.934$, df = 1, $P = 0.039$), and that the MPharm had helped them to develop appropriate professional attitudes ($\chi^2 = 7.831$, df = 1, $P = 0.005$) and behaviours ($\chi^2 = 3.871$, df = 1, $P = 0.049$).

Ethnicity
Respondents from black and minority ethnic groups were more likely than their white peers to have felt prepared for all aspects related to a professional approach to pharmacists' tasks. However, only in relation to preparedness to reflect on their practice were significant associations between ethnicity and learning outcomes found ($\chi^2 = 14.150$, df = 1, $P < 0.001$).

Pharmacy school
Significant differences were found in relation to three outcomes: problem-solving ($\chi^2 = 26.921$, df = 13, $P = 0.013$), reflective practice ($\chi^2 = 39.077$, df = 13, $P < 0.001$) and professional behaviours ($\chi^2 = 24.329$, df = 13, $P = 0.028$). As reported above, (proportionally) fewer students attending schools E, G, K and L agreed that the MPharm had prepared them for a professional approach to pharmacists' tasks than the cohort overall. Those following the 5-year sandwich course at school D were significantly less likely than their peers following the traditional 4-year course at the same institution to have felt prepared for reflective practice ($\chi^2 = 5.534$, df = 1, $P = 0.038$).

Multivariate analysis
Joint hypothesis tests of relationships between pharmacy school attended and Group 2 learning outcomes showed that pharmacy school attended predicted variation in perceptions of preparedness for problem-solving and professional behaviours (see Table 4 for more details).

Table 4   Test results for pharmacy learning outcomes

	Gender		Ethnicity		Pharmacy school	
	Test statistic	*P* value	Test statistic	*P* value	Test statistic	*P* value
Competencies necessary for the performance of tasks						
Good clinical knowledge	0.06	0.951	0.67	0.504	41.70	0.000
Good knowledge of dispensing	−0.06	0.952	2.59	0.010	77.02	0.000
Good knowledge OTC medicines	−0.09	0.928	4.60	0.000	123.11	0.000
Research skills	−1.36	0.174	−2.06	0.040	23.42	0.037
Patient-centred care skills	−1.37	0.170	1.74	0.081	30.37	0.004
Laboratory skills	0.21	0.831	−0.42	0.673	35.15	0.001
Practical skills	−0.88	0.377	0.81	0.418	22.13	0.053
Intellectual skills	−1.06	0.288	−1.99	0.046	10.28	0.671
Team-working skills	−3.15	0.002	1.93	0.054	35.89	0.001
Communication skills	−1.97	0.049	1.17	0.241	30.31	0.004
Competencies necessary for a professional approach to tasks						
Problem-solving	−2.38	0.017	1.37	0.169	26.04	0.017
Reflective practice	−2.99	0.003	0.51	0.607	15.71	0.265
Ability to recognise limitations	−2.12	0.034	0.18	0.855	14.23	0.358
Professional attitudes	−2.99	0.003	0.51	0.607	15.71	0.265
Professional behaviours	−2.24	0.025	0.08	0.936	23.62	0.035

Discussion

Main findings

For the first time, results published here demonstrate important contextual and demographic differences in pharmacy students' perceptions of their preparedness for professional practice. In the context of the progressive entry of women to the profession,[23–26] findings that, on the whole, female students were more likely to have felt prepared for practice than male students are important. Since a similar gender gap has also been recorded elsewhere between male and female pharmacy graduate performance across a range of clinical competencies[7] it is possible that differences in perceptions of preparedness for performance will correspond to differences in performance in practice.

Of particular note are findings that pharmacy school attended independently predicted variation in 11 outcomes evaluated once gender and ethnicity had been adjusted for. Our results in fact suggest that some schools better prepare their students – or at least their students perceive that they do – for practice.

Strengths and weaknesses of the study

Perhaps, though, interpretation of our results should be undertaken cautiously, since there are a number of limitations in the methods used. First of all, it is possible that in evaluating perceptions of preparedness against RPSGB learning outcomes the students taking part in our research may have lacked a complete understanding of learning outcomes criteria and that this may have affected their evaluation of their preparedness. This may explain why students found it easier to rate preparation for broad areas of competence such as communication skills rather than specific skills. Moreover, the measurement of learning outcomes raises specific methodological issues associated with attempts to measure perceptions of preparedness for performance. This is, of course, not the same as measuring performance. Measuring performance requires assessment tools such as Objective Structured Clinical Examinations (OSCEs), which are designed to assess competence in the performance of pharmacist-role tasks as well as to measure performance in how tasks are approached, and hence provide a combined assessment of both groups of pharmacy education learning outcomes included in our model (see Figure 1). As OSCEs taken by final-year MPharm students have found that students perform poorly in clinical problem-solving,[27] patient consultations and prescription checking[28] it may be the case that our respondents' assessment of their preparedness for practice will not correlate well with their actual performance as pharmacists.[29]

Yet differences in perceptions of preparedness may not be important for practice: a smaller-scale study than ours found that, although clinical competencies varied according to pharmacy school attended at the beginning of pre-registration training (the year of employment in a clinical pharmacy practice environment that British graduates must complete after their undergraduate degree), because of similar experiences across the training year by the time of its completion these differences were no longer evident.[7]

While this may suggest that measuring learning outcomes is an unreliable tool for making predictions about professional behaviours this may not be the case at a pharmacy-school level of analysis, since differences between students graduating from different British pharmacy schools in relation to their performance of various pharmaceutical care competencies have also been reported.[7]

Contribution to the field

There have been few published studies of students' perceptions to their preparation for practice as measured against predefined learning outcomes for undergraduate pharmacy education in Great Britain. Our findings of overall high levels of perceived preparedness for performance of pharmacists' tasks and for a professional approach to those tasks are in line with those published previously,[16,17] suggesting that students felt, on the whole, prepared for both groups of learning outcomes evaluated in this study.

Differences between subgroups and between students attending the 14 schools of pharmacy have not been noted before: other studies reporting students' perceptions of their undergraduate education have been small-scale, focused on one institution only, and qualitative,[17] or have not published contextual and demographic analysis.[16] That we found significant gender and ethnic differences is important, especially given that gender and ethnic differences found cannot be accounted for by different proportions of, for example, some ethnic groups within the two genders. These findings are relevant to those planning to revise curricula now that new approaches to undergraduate education have been proposed.[20]

Policy implications

In schools where fewer students taking part in our study felt prepared, then – at least from the perspective of our respondents – pharmacy curricula have not entirely met RPSGB requirements for and of graduates. Specifically related to knowledge of OTC medicines, it is worrying to discover that overall less than half of those taking part agreed that they felt the MPharm had provided them with a good knowledge of these medicines, although the range in responses between the proportions agreeing at each pharmacy school that they felt prepared for this aspect of pharmacy practice was large (ranging from 23.3% at school C to 77.2% at school D; see Table 3 for details). Interestingly, the school where the largest proportion of respondents felt prepared for OTC medicines was also the school offering both a sandwich and a traditional MPharm course, suggesting perhaps that school D was better at equipping students to feel prepared for this practice-based knowledge.

As the medicines advisory role of pharmacists becomes an increasingly important aspect of patient-centred pharmaceutical healthcare this finding has implications for future service delivery, because sales of OTC medicines form part of a medicines advisory role. In the context of recent recommendations[20] to increase opportunities for undergraduate pharmacy students in Great Britain to develop, throughout their education, a clinical approach to practice through meaningful clinical context and experience, this lack of preparedness for OTC medicines in the future may be

avoided. Moreover, our findings raise the question of whether some students are failing to be prepared for multiple competencies, because the feeling of not being prepared for OTC medicines was also associated with not feeling prepared for other outcomes related to the performance of pharmacists' tasks.

Thinking about how to measure learning outcomes from a policy perspective, findings raise the question of the extent to which it is reasonable to infer that learning outcomes have been met. This question is of course of relevance to those hoping to evaluate proposed changes in undergraduate pharmacy education.

Conclusions

What the results of our study do show is that MPharm graduates feel well prepared for pharmacy practice as they embark on their careers. Given the longitudinal nature of our work, we will be able to follow-up how closely perceptions of preparedness match experiences of, and performance in, practice.

The message for curriculum planners is that more formal assessment of skills would provide students with an accurate measure of how they are likely to perform as pharmacists in practice. Such assessments would also allow schools to determine the extent to which they, too, are delivering desired learning outcomes.

Declarations

Conflict of interest

The Author(s) declare(s) that they have no conflicts of interest to disclose.

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